Gleanings in Bee Culture

Established 1873

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FEBRUARY, 1938

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Subscription Rates—United States and Canada, one year, $1.00; two years for $1.50; three years for $2.00. Single copy, 10 cents. Other countries, 25c per year additional for postage. Discontinuance—Subscription stopped on expiration. No subscriber will be run into debt by us for this journal. Change of Address—Give your old address as well as the new and write the name to which the journal has heretofore been addressed. Remittance should be sent by postoffice money order, bank draft, express money order or check. Contributions to Gleanings columns solicited; stamps should be enclosed to insure return to author of manuscript if not printed. Advertising Rates—Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. Advertisers' Reliability—While the publishers do not guarantee advertisements in this journal, they use utmost diligence to establish in advance the reliability of every advertiser using space in this journal.

Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly.

The A. I. Root Company, Publishers, Medina, Ohio

E. R. Root and M. J. Deyell, Editors; M. W. Hobart, Assistant Editor; H. H. Root, Associate Editor; D. C. Babcock, Circulation Manager.

XUM

Beekeepers, meet Mrs. Walter T. Kelley

Mrs. Walter T. Kelley

For years you have been seeing my pictures in advertisements and I feel pretty well acquainted with you beekeepers, so now, let me introduce Mrs. Kelley to you. Mrs. Kelley has been working to your and my advantage for years. She, with the assistance of several girls operates our office which is right here at the factory. It is Mrs. Kelley who opens your letters and writes you. It is Mrs. Kelley who sees to it that your order is filled promptly or who writes you for further information, etc. Mrs. Kelley has a wide knowledge of bees and bee supplies and when it comes to prices or questions about your orders, she is the one to ask. If it is some hard question about bees or if it is some technical point about the construction of some bee hive part she consults me, but in the end it is Mrs. Kelley who writes my reply.

If you come to our factory, if you telephone us, or if you see us at meetings do not hesitate to talk to Mrs. Kelley on any point about our business as the chances are 10 to 1 that she can give you more detailed information than I can, especially if it is about your order.

Right now I am putting the finishing touches on my 1938 catalog and I hope to have your copy ready to mail early in February. I want every beekeeper to see this edition as it will list several new items not listed in any other catalog. Items so useful and so reasonably priced that I do not believe that you can afford to get along without them. Write for your free copy if you are not on our mailing list.

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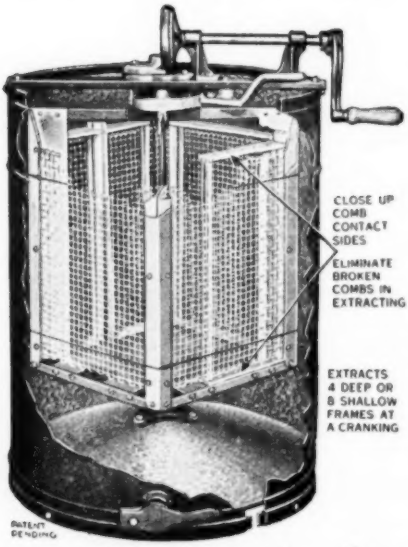
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ELIMINATE BROKEN COMBS IN EXTRACTING
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Falconer, New York

The Monthly Honey Market

U. S. GOVERNMENT REPORT
Information from Producing Areas (first half of January).

California Points: Southern California—The weather has been mild to warm with average temperatures ranging 6° to 10° above normal, but with practically no rainfall the past two weeks. Although rainfall early in the year started grass and sage plants the deficiency in rainfall, especially in the southern portion of the area, is giving beekeepers considerable concern and beekeepers fear that sage will not yield much without considerable more rainfall. Dandelions are commencing to bloom and mustard is becoming abundant in irrigated areas. Eucalyptus is blooming profusely and yielding considerable nectar where abundant. A decided movement of bees into orange locations has taken place since the first of the year and indications are for an early orange flow. Bees in citrus groves are already getting some nectar from off-bloom oranges, which is unusual at this season of the year, and colonies at Pomona are reported to have capped Orange honey. Stores are becoming short in many hives. Bees as a whole seem to have adequate feed at present. The sale of honey has recently been slow. Though Amber honey has been offered rather freely many beekeepers are holding their White honey in the hope of higher prices later. Prices show little change from those of two weeks ago. Sales by beekeepers in ton lots or more, per lb., f. o. b. Southern California delivery points: Orange, Extra White to Water White 6-6½c, few higher; White 5½-5¾c; Sage, Extra White to Water White 5¼-5¾c, few 6c; White 4¾-

Sullivan's Apiaries

Announce a partner and will be known as

Sullivan Wright and Company
Gilbertown, Alabama

Italian queens and packages.

Reliable Goods from Reliable People.

Order from us and be satisfied.

Package Bees and Queens

The type that gives you less trouble in swarming season. Queens 75c each. 2-lb. package and queen, $2.45. 3-lb. package and queen, $3.15. Discount to dealers. Safe arrival, satisfaction guaranteed.

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High quality Golden and Three-banded Italian Queens and package bees for Spring, 1938, delivery. Book your orders early and reserve shipping date.

(Comb Packages with queens)

2-lb. pkg. with queen with one frame of brood each	$2.45
3-lb. pkg. with queen with one frame of brood each	3.15
4-lb. pkg. with queen with one frame of brood each	3.85
2-lb. pkg. with queen with two frames of brood each	3.15
3-lb. pkg. with queen with two frames of brood each	3.85
4-lb. pkg. with queen and with two frames of brood each	4.55

(Combless Packages)

2-lb. pkg. with queen ea.	$2.45
3-lb. pkg. with queen ea.	3.15
4-lb. pkg. with queen ea.	3.85
Untested queens ea.	.75

Nineteen years' experience in the bee game, prompt and efficient service. Safe arrival and satisfaction guaranteed, and a health certificate with each shipment. Orders booked with 10% down balance at shipping time. 15 per cent discount to approved dealers.

J. L. GASPARD, Hessmer, La.

Newton and Lott Bee Company

Route 2, Baton Rouge, Louisiana

To Our Friends and Customers:

We have changed our title to the above for no other reason than to give individuality and personal identification to our product.

As heretofore we offer package bees and queens from gentle and prolific stock that will be profitable to you.

Business intrusted to us will be given personal attention and prompt service. Prices same as last season.

(Formerly, Louisiana Southern Bee Farm)

5c; Buckwheat-Sage, Light Amber to Extra Light Amber 4¼-4⅝c, few 4¾c; f. o. b. country points: Light Amber to Extra Light Amber Alfalfa $5.00-5.25 per case of 120 lbs. Beeswax is barely steady at 19-23c per lb. delivered Los Angeles, according to color and condition.

SUMMARY—Temperatures have continued to range above normal west of the Plains Area and also along the Atlantic Seaboard, but in the Mississippi and Ohio Valleys and southward the temperatures have been sub-normal. Bees have been able to fly occasionally in the West even into Idaho, and in the East they are reported in good condition. Already pollen is coming in from early plants such as maple and elm in the lower tier of States and brood-rearing is under way. Throughout the eastern White Clover Belt beekeepers are looking forward to an especially good yield of nectar because of the unusual amount of moisture in the ground and the fact that clover plants are more numerous and in better shape than average. In consequence many commercial beekeepers are planning on increasing their colonies either with package bees or by increase from their own colonies, and package beemen in the South are receiving numerous inquiries already. If the present mild weather continues in the Mountain States winter losses may be below expectations and this will be reflected in a lighter demand for package bees from that area. Demand for large lots of honey has recently been light but local sales have continued fairly good. Stocks of honey continue to lessen in all areas and are rarely abundant except in California. Market prices show little change in any section. Section comb honey is everywhere scarce and supplies are almost completely exhausted in many producing areas.

Monthly Report of Honey Producers

Early in January we sent the following questions to honey producers: 1. What per cent of the honey produced in your locality has already left the hands of the producers? Give answer in per cent. 2. At what price has honey been sold or contracted for, if any, in large lots (carload or less) in your locality during the past month for (a) extracted honey, per pound? (b) comb honey, fancy and No. 1, per case? 3. What are prices when sold to grocers in case lots of (a) extracted honey in 5 lb. pails, or other retail packages in terms of 5 lb. pails? (b) Comb honey, fancy and No. 1, per case? 4. What is the retail price to consumers in your locality of (a) extracted honey in 5 lb. pails, or other retail packages in terms of 5 lb. pails? (b) comb honey, fancy and No. 1, per section? 5. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid. 6. How does number of colonies to be wintered in your locality compare with that of last year? Give answer in per cent. 7. What is your estimate of prospects for a normal honey crop in 1938, considering the present contion of the bees and the honey plants? Give answer in per cent of average crop for your locality.

State	Name	Per cent Sold	Large Lots Ex.	Large Lots Comb	To Grocers Ex.	To Grocers Comb	To Consumers Ex.	To Consumers Comb	Movement	No. Wintered	1938 crop Est.
SE-Ala.	(H. C. Short)						.60		Fair	100	100
SC Ala.	(J. M. Cutts)									100	100
B. C.	(A. W. Finlay)		.10		.70		.90		Fair	100	
S-Calif.	(L. L. Andrews)	70	.06½				.60	.17	Fair	100	50
C-Calif.	(Davis Bros.)	50			.43		.55	.25	Slow	85	100
SE-Colo.	(Otis E. Adcock)	60			.42		.50		Slow	100	100
E-Conn.	(Allen Latham)	50			.75	5.00	1.00	.30	Fair	100	100
S-Fla.	(C. C. Cook)	100	.06		.50		.65		Fair	100	100
C-Fla.	(Harry Hewitt)	90			.50		.65		Fair	90	100
SE-Ga.	(J. J. Wilder)	85	.05½		.50		.70		Fair	100	100
NC-Ills.	(A. L. Kildow)	100	.06	3.00	.45	2.50	.50	.13	Rapid	95	75
NC-Ind.	(T. C. Johnson)	90			.60	4.00	.65	.23	Slow	100	100
NW-Ind.	(E. S. Miller)	60	.07		.50	3.60	.65	.20	Fair	90	100
W-Iowa	(E. G. Brown)	100					.65		Fair	75	75
S-La.	(E. C. Davis)	90	.06		.40		.55		Fair	100	100
N-Me.	(O. B. Griffin)	90				4.75		.30	Slow	105	100
N-Mich.	(Ira D. Bartlett)	80			.55	4.00	.65	.25	Slow	90	100
E-Mich.	(L. S. Griggs)	100	.08	3.50	.50	4.00	.65	.21	Fair	80	100
S-Mich.	(Floyd Markham)	95	.08		.55		.75		Fair	100	100
C-Mich.	(E. D. Townsend)	100								80	80
E-Minn.	(Floyd W. Ray)		.06¼		.47		.60		Fair	90	90
W-Minn.	(B. L. Morehouse)	60	.06¾		.50		.65		Fair	110	100
W-Nev.	(Mrs. E. G. Norton)	100								80	
W-N. M.	(C. A. Baltzley)		.05	2.75	.45	3.60	.60	.20	Fair	80	75
W-N. Y.	(Adams & Myers)				.50		.70	.20	Slow	100	100
NW-N. Y.	(Geo. B. Howe)						.68	.21	Fair	100	100
C-N. Y.	(F. W. Lesser)	75	.07¾						Fair	100	125
SE-N. C.	(W. J. Martin)	90	.06½		.60		.78	.20	Fair	100	100
E-N. D.	(M. W. Cousineau)		.06½	4.00	.59	4.00	.45		Good	90	80
C-Ohio	(R. D. Hiatt)	100			.57	4.75	.75	.27	Fair	85	100
NC-Okla.	(C. F. Stiles)	85			.45		.65	.19	Fair	80	80
C-Okla.	(C. A. Baltzley)	90	.05½	2.60	.45	3.60	.63	.20	Fair	100	90
W-Ore.	(H. A. Scullen)	50			.40		.55		Slow	100	100
W-S. C.	(E. S. Prevost)	100							Fair	90	100
C-Tenn.	(J. M. Buchanan)	90					.75	.20	Fair	100	90
C-Texas	(T. A. Bowden)	90			.50		.60		Fair	95	90
S-Texas	(J. N. Mayes)	5	.05				.40		Fair	95	100
S-Texas	(H. B. Parks)	90			.48		.55		Fair	98	110
N-Utah	(W. H. Hendricks)	85			.43		.55		Slow	85	
W-Vt.	(Phillip Crane)	98							Rapid	110	100
S-Va.	(T. C. Asher)	85			.50	3.60	.70	.18	Slow	100	95
SC-Wash.	(Chas. Higgins)	75	.06¾				.55		Fair	100	100
SE-Wisc.	(N. E. France)	100					.55		Fair		25
S-Wis.	(James Gwin)	95	.07½		.48		.65		Fair	90	90
N-Wyo.	(Earl C. Reed)	90	.06		.50		.60		Fair	100	75

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Overbey Apiaries, Bunkie, Lo

YOUR PACKAGE IS NT

Our bees are young, hardy, healthy honey-getters. Our queens are as good as can be had. Our packages are constructed of the lightest of material. Our full weight, highest of quality, and prompt shipments guarantee you perfect satisfaction.—**Pay us a visit sometime—.**

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We are all now

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in nineteen thirty-eight. How soon spring and summer will be here again! Will we be found wanting supplies when they are urgently needed?

Plan for a good year. Make ready now the supplies you will need in the active season.

May we help you choose the right equipment? Let us quote on your list.

Ask for beekeeping literature.

The new 1938 catalogs are ready for you now. Ask us for it if you do not get your copy soon. It is free for the asking.

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224 West Huron Street
CHICAGO, ILLINOIS

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of Service to the Beekeeping Industry

. . . 40th Year

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Boyd, Wisconsin
A New Catalog is Available for You Now

bey Apiaries, Bunkie, Louisiana

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NTTER THAN YOUR QUEEN

2-lb. packages with young, laying, Italian queens	$2.45
3-lb. " " " " " "	3.15
Extra young, laying, Italian queens	.75

Less 15% to dealers. Order early.

Root QUALITY Bee Supplies

AT INDIANAPOLIS----Get Our Prices

We have a fine stock of bee supplies and give prompt service to all parts of the state.

LET US QUOTE ON SEASON'S NEEDS

A. I. ROOT CO. OF INDIANAPOLIS 121 N. Alabama, Indianapolis

"50 - 50"

Four important things control your honey crop. Upon these, depend the amount of your success or failure.

QUEENS
FOUNDATION
SEASON
YOUR ABILITY

Muth's Queens (ultra violet treated) and "Hercules" non-sagging comb foundation takes the **chance** out of half your problems.

Ship your beeswax to us for manufacturing into comb foundation. Our high quality is undisputable, our prices low, attractive.

AS LOW AS 10c PER POUND

Write for complete list of working your wax into various sizes and weights. Money saving prices quoted on all other supplies. Buy early and save money.

THE FRED W. MUTH CO.

Pearl & Walnut Sts. Cincinnati, Ohio

To New York State Beekeepers:

NOW is the time to check over your bee supplies and to get ready for that bumper crop of fine honey we're going to get this coming season. Our warehouse is filled with fresh, clean supplies waiting for your orders. Send us a list of your requirements for our special quotations.

REMEMBER, Root's Three-ply foundation is still the biggest thing in the apiary! One Three-ply brood comb is worth three of the ordinary kind. The best is the cheapest in the end.

BEES and QUEENS—We can furnish bees and queens for early spring delivery at regular southern prices. Send your orders to us and be sure of getting bees from breeders who have the best stock.

BEESWAX—Trade your wax for bee supplies or anything else in our line. We pay 2c a lb. more when proceeds are taken in trade. Remember, too, that we can render your old combs and cappings. We get all the wax there is, and our charge for doing this work is small.

Send for our 1938 catalog if you haven't received a copy.

A. I. Root Co. of Syracuse

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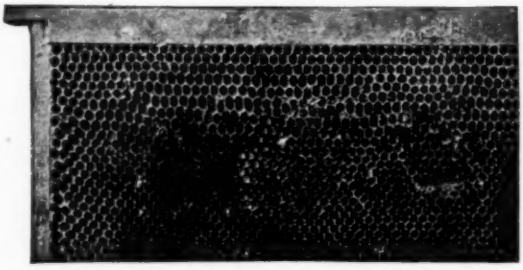

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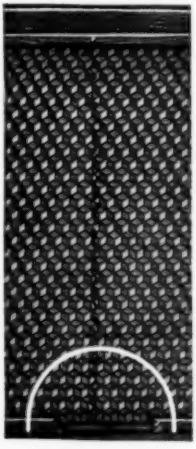
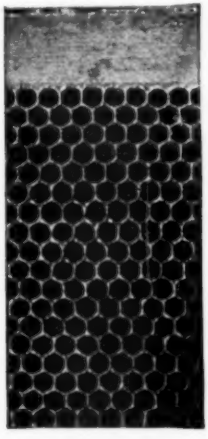
Pure Beeswax

In all Dadant's Foundations you are sure of nothing but absolutely pure beeswax, just as your bees make it; safe for food or industrial use on any market.

With twenty-three worker cells to the square inch and six cycles of brood a year, ten square inches of poor comb, lost to brood-rearing, may reduce the worker bee and harvest count by **fourteen hundred bees.** A single comb with this much lost brood area, used ten years—**costs you fourteen thousand bees!**





Boost Your Colonies with Dadant's Crimp-wired Foundation

Comb in the brood nest, unfit for brood, is a source of loss you can't afford. It not only cannot produce workers, it interferes with laying in the comb that is fit for brood; it may produce crop-consuming drones by the hundreds. It's costly any way you look at it.

With Dadant's Crimp-wired Foundation in Lewis slotted bottom-bar frames, you get all-worker comb from top to bottom and from corner to corner. Try it and watch the bees pour out. Get the best queen you can get to head your colony, give her a set of all-worker combs, and watch your supers fill with honey.

DADANT & SONS, Hamilton, Illinois

Makers of Dadant's Famous Foundations

Crimp-wired—Plain—Surplus

DADANT'S FOUNDATION
CHOICE OF EXPERT BEEKEEPERS

BEESWAX WANTED. We buy at all times. Send a card stating quantity you have to offer.

Vol. 66
No. 2

Gleanings in Bee Culture

February
1938

Shaking vs. Burning

H. M. Krebs

Shaking Means Perpetuation of Disease; Burning Means AFB Eradication

The article in August, 1937, Gleanings, page 467, regarding the orthodox treatment for AFB was very interesting to me for two reasons. In the first place, I have been doing the same job for eleven years in two different states, and secondly, having met Mr. Heard of Texas in San Antonio last fall, I can well believe he is entirely capable of doing the type of work described in the article.

No doubt some readers do not agree that the burning treatment for AFB is orthodox. It is for the benefit of such skeptics that I wish to add my ideas on the matter, having had six years' experience as an inspector under the old idea of shake treatment, and eleven years of burning.

A great many beekeepers overlook the fact that the bee inspector sees more disease and terrible disease conditions in a season than twenty beekeepers should see in their whole lives. Some of the stories that could be told by inspectors would be branded as very tall stories if not outright lies by the average beekeeper. Knowing this, I am going to be careful, and furthermore, a short article of this kind could not describe much of the many disease conditions I alone have seen. The worst type of beekeeper the inspector meets is the one who says, "You are doing a fine job of cleaning up disease by burning, but you can't burn mine for I know how to treat it," or "Certainly I can cure disease by shaking for I have been doing it for thirty years."

An Unsatisfactory Method

When I started inspecting in Michigan, we were working under the shake plan and left an affidavit with the beekeeper to fill out, have it notaried, and return to us within a certain time, stating that he had done the work as outlined. You would be surprised at the number of notaried papers we received and then, on checking back on the apiary, found that not a thing had been done! In a short time these forms were all thrown in the waste basket and the inspectors instructed to check back at the expiration of the time limit. Many times we found conditions worse than as though nothing had been done. Colonies would be shaken, but, due to rush of work, the combs would be left exposed to all bees in the territory. Such conditions were not only found once, but many, many times. Do you wonder the bee inspectors say that shaking spreads more disease than it ever cured? I could fill a whole issue of Gleanings with just such anecdotes as this.

Shortly after becoming chief inspector in Michigan, I recommended to the Michigan State Beekeepers' Association that some action must be taken at once to change the picture. We had found whole counties practically denuded of bees due to disease, and the old equipment scat-

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tered over the country. Some of the main beekeeping counties of the state showed 35 to over 50% disease. This report opened the eyes of the beekeeper with the result that they had a law at the next session of the legislature that would really eradicate the disease. This was in 1927. At the end of 1931, there were 22 clean counties and the statewide disease percentage showed 4½%. This did not include the bees in the clean counties, else this percentage would have been considerably lower. I do not have figures for that state since 1931, but due to the depression when it was hard to get appropriations, probably the disease situation there has remained somewhere near stationary.

A very similar situation existed here in California prior to 1927 when the burning law was put in operation. Our statewide disease percentage is now only slightly over one per cent and for the past several years we have included some minor bee and honey counties where inspection has just been started, and the disease runs extremely high. As an illustration, Santa Barbara County showed 12.9% disease in 1936 and only 0.9% in 1937. Santa Clara County showed 13.5% in 1935 and 1.4% in 1936, 1937 figures not being available in the latter case. This shows what can be done when you have a law that really eradicates.

Burning on the Spot

Let me cite a concrete example of what burning diseased colonies has done for one of our outstanding California beekeepers. The inspector was met with the following monolog a few years ago: "I have shaken diseased bees for years, and have tried all these so-called disease eradicating solutions, but my disease problem is worse now than ever. The law says 'burn' and that is what we are going to do. My men and trucks are at your disposal. Burn everything you find." They hauled disease out by the truckload and burned it. This man continues to burn the little disease he now has and I can tell you from experience that it is "little", too, for I have personally inspected his thousands of colonies ahead of him in the spring, and you could put all I ever find in one eye and still be able to see foulbrood in the apiary of the fellow who continues to treat. Some of our California beekeepers even go so far as to burn everything connected with a diseased hive, saying that there is too much chance of recurrence of disease from a diseased hive or super, even if it is scorched out as thoroughly as possible. Men as careful as this will be in the business and still making money long after the more careless beekeeper is "out".

I would like to draw your attention to an article and map on page 425 and 426 of the A. B. J. for September, 1937. Please note that the "white" states are those that have a strong burning law for eradication of AFB. This is a better argument than any I could present, for this is visual.

A Little Trick in Burning

Referring again to the article in August, 1937, Gleanings, there is a method of burning honey and brood that was not mentioned and which will save the beekeeper or inspector a lot of time. That is to have something to form a grate over the top of the hole, such as old car axles, etc., so as not to allow any combs down in the hole at any time. Build a good fire in the hole and you can pile as many combs on the grate as you wish and never smother the fire. The wax and honey is hot as it drains down on the fire in this way and burns at once with no smothering action. Still another idea in scorching hives by the "pile up" method, is not to kick them over at all, but rather let them stand. Either cover when the fire inside has reached the proper pitch and throw a shovel of dirt over the entrance so as to smother the fire, or, better yet, if water is handy, throw a small amount in the top of the pile, then cover and close the entrance with dirt. In either case, the terrific heat generated is thus retained for some time and aids in the disinfection.

There are still some beekeepers who maintain that burning is going too far, and that such methods are not at all necessary. They think shaking or the long hoped-for disease-resistant bee, or possibly a combination of the two, will be the ultimate solution. Needless to say, these people have not seen many of the sights that so often greet the eye of the inspector. Others say that the inspector is doing all he can to hinder finding the disease-resistant bee by burning all diseased colonies. Nothing could be farther from the truth. I believe I can speak for all inspectors when I say we are interested in disease-resistant bees and have personally recommended that bees that showed any promise be

(Continued on page 123)

Using Honey Bees

J. M. Robinson, Managing Director of Committee on Shipping Package Bees and Queens, Auburn, Ala.

A Paper Read at the Recent International Beekeepers' Congress in Washington, D. C.

J. M. Robinson

There is an interesting inscription on the Archives Building on Pennsylvania Avenue here in Washington. The inscription or motto is designed to stimulate each person to go on with his efforts for the good of humanity. It is a motto needed by all of us. We should think of it each day. The motto reads **"What has passed is prologue".** Those five words seem very trite, yet when we stop to meditate a moment and think of the meaning of "prologue", it has a real kick to it. Prologue is "the preparation for a performance." When we stop to think of everything that has been done in the past as a contribution to the preparation for a performance such as the development of a democracy like ours of today, or if we apply the motto to the concerted effort of the thousands of citizens in this democracy who are interested in going along with the honeybee, then the motto "What has passed is prologue" gives us a hope.

When our forefathers came to America they brought with them the honeybee. The honeybee eventually thrived on the great new continent. Apparently there are no records of native honeybees in America.

With the development of the movable-frame hive which was completed nearly one hundred years ago, an enlarged use for the honeybee was made possible. Today there are hundreds of thousands of movable-frame hives in use in America collecting surplus honey in order to provide sweets—carbohydrates as a part of man's daily diet.

The honeybee—the queen—if you will, is one of the finest bits of reproductive machinery in the world. She is gentle, yet she produces eggs by the thousands daily under favorable conditions. With such an efficient mechanism, a package of two pounds of bees and a fertile queen can produce enough workers to bring in 600 pounds of honey in four and one half months. To obtain such results, the efficient co-operation of all bees in the colony must be obtained and they literally work themselves to death within five or six weeks. There are more than four million queens at present in the U. S. A. laying eggs during each growing season, producing workers to gather surplus honey, producing as much as 170,000,000 pounds of honey a year. How to dispose of this great amount of sweet requires cooperation in salesmanship. It must have the trail blazing and torch bearing hand of friendly contacts between honey and its users. The American Honey Institute is doing this job today and it must be supported in order to keep this vital work going. All of this is prologue of what is to happen.

Honeybees today have passed the prologue of beeswax and honey production. They have demonstrated an unusual ability to cross-pollinize many fruit and vegetable blossoms. It appears that they will have the pleasure of cross-fertilizing the streamline red clover as well as the distinction of having tongues long enough to gather the nectar from the shorter corolla of the same flower.

Beginning of Package Bees

The early work of Langstroth and a group of other interested beekeepers (1856) in importing Italian queens found a way to increase the use of a type of bee which has become the one most generally used in America, one that produces good workers and is not so wild. Twenty-three years later (1879) A. I. Root reported the shipment of live bees successfully

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in one-half pound packages. From the beginning to the present time, screen wire has been used in making such cages. From the half-pound shipping cage of a half century ago has evolved the modern cage ranging from one to five pound capacity. The two and three pound cages are today the most generally used type of container for shipping.

The curvature of the earth and its inclination on its axis provides a problem of climate which affects the honeybee and its keepers. The climatic conditions of North America are such that where the larger nectar flows are found during the summer months, much cold weather abounds during the winter. The low temperatures of the long winters cause great losses of bees, often weakening the colonies to the point where they are practically useless unless strengthened by additional bees.

In the southern portion of the United States the bees respond to the warm days of mid-winter and begin the job of building up the family. By the time northern United States and Canada begin to thaw out in April and May, the bees in southern United States and California are approaching the swarming conditions. The hives are full of young worker bees with young fertile queens ready to go north for the harvesting of nectar.

Cooperation Needed

In order to continue the development of an adequate supply of package bees and queens, cooperation between the honey producer and the shipper is necessary. Cooperation is a wonderful word; chiseler is also equally as wonderful when it is in action. Either activity among the patrons of the honeybee may give a thrill to both parties participating in either type of activity.

The spirit of the chiseler well nigh wrecked the package bee business in 1932 and in 1933. Some honey producers tried to get cheap bees—bees below the cost of production, they insisted. They got the bees. The shippers nearly ceased activity. The shippers went into a huddle for a marketing agreement in 1933 under the Agricultural Adjustment Act. By so doing, the honey producers have been getting the packages they needed and the shippers have been in a position to make increases in order to accommodate the increasing demand. Certain phases of the Agricultural Adjustment Act were declared unconstitutional, but not that portion pertaining to Marketing Agreements. When the shippers attempted in 1935 to obtain a law to continue the authority for the Bee Marketing Agreement, objection was voiced in the Senate regarding the desire to control the sex life of the queen bee. When it was made clear to the objector by a friend that really there was no desire of beekeepers to control such activity of the queen bee, but, on the other hand, there was a desire among men to encourage the queen to even greater efficiency in the volume of finished products, the opposition ceased. In 1936 the efforts of the shippers met less objection and today a law has been passed and approved by the President, authorizing the Secretary of Agriculture to aid in developing a constitutional Bee Marketing Agreement with the authority to issue orders. This new law not only gives authority for the formation of a Bee Marketing Agreement but it includes the products of the honeybee as well, namely, honey and beeswax.

The handlers of package bees and queens through their organizations are taking steps to transfer to the proposed revised Marketing Agreement, so that the honey producers may be assured of as good trade practices by the handlers under the new Agreement as has been in effect for the past four shipping seasons.

Stabilizing Our Industry

The shippers for the most part have been willing to live up to the standards set forth in the Marketing Agreement now in effect. If the information coming to the shippers is correct, the honey producers in the United States and Canada have learned to appreciate the value of the shippers living up to such standards. Establishing confidence among the customers and maintaining it with guaranteed service certainly should add stability to the beekeeping industry.

The shippers and the honey producers who attempt to deviate from such standards place themselves in the way of furthering such progress and encouraging the development of this industry.

It is the desire of the shippers of package bees and queens to deliver good quality packages and queens to the honey producer or the orchardist-gardener when and where they are wanted so that the honey producer

(Continued on page 122)

Mrs. Benjamin Nielsen

Adventures in Cookies

Mrs. Benjamin Nielsen

If You Haven't Eaten Honey Cookies You Have a Treat in Store

Ask any small boy and he'll tell you that a house just isn't a home unless it has a well-filled cooky jar—be it a plain, old-fashioned one on the pantry shelf or a gay new-fangled one that decorates mother's buffet.

And there's nothing quite so good as homemade cookies! A plate of crisp, spicy cookies or dainty tea cakes cooling on the rack bring back fond memories to Mother and Dad. Memories of cooky-baking day—the cheery, floury confusion of the kitchen, the spicy smell as each pan came from the oven, the waiting for a chance to "snitch" another delicious cooky. Remember? What inroads we made on those freshly baked goodies!

Our cookies can be as plain or as festive as fancy dictates. Use ingredients that are fresh and of good quality. In mixing follow the directions carefully as the individual nature of each kind of cooky depends on the manner of mixing. If the dough is to be rolled it should be thoroughly chilled before rolling. It is then possible to handle a softer dough and the result is a more tender cooky. Rolled cookies should be placed not less than an inch apart to allow for spreading. Drop cookies should be spaced 1½ inches apart to allow for spreading. Icebox cooky dough may be kept in the refrigerator for two weeks and cut thin and baked when needed.

Honey Cookies

Assemble one cup shortening, 1 cup brown sugar, 2 eggs, 1 cup honey, 5½ cups sifted flour, 1 teaspoon cinnamon, ½ teaspoon nutmeg, ½ teaspoon cloves, 3 teaspoons soda, and 1 cup sour milk.

Cream shortening and sugar together; add beaten eggs and honey. Add sifted dry ingredients alternately with the sour milk. Mix thoroughly and let stand overnight. Next day roll dough out to ¼ inch thickness, sprinkle with granulated sugar and cut in any desired shapes. Bake in a moderate, 350 degree F. oven for 15 minutes.

You will find many delightful variations possible with the above basic recipe. At our house we make filled cookies by placing half of the rounds on cookie sheets dotting with a spoonful of filling, topping with another round and pressing edges firmly together with the tines of a fork. A date or pineapple filling is delicious. For the date filling you will need: 1½ cups chopped dates, ⅓ cup water, ¼ cup honey and ¾ cup chopped nutmeats.

Cook dates, water and honey together over low heat about 10 minutes. Cool; add nutmeats; mix well.

Fig Newtons

Another time we choose to make Fig Newtons. Then we roll out the dough and cut it into strips about 4 inches wide. Next we place fig filling along one side, about 1½ inches wide, fold the dough over and underneath the spread side, pressing firmly to make a snug little pocket. Then we cut the filled strips into 2-inch sections and bake in a moderate oven.

Honey Brownies

These call for: Three tablespoons butter, ½ cup sugar, 4 tablespoons honey, 1 egg, beaten, 1 ounce melted chocolate, 7 tablespoons sifted pastry flour, ¼ teaspoon baking powder, 1 tablespoon hot water, 2 teaspoons vanilla and ½ cup chopped pecans.

Cream butter and sugar together until light and fluffy. Add honey and

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continue creaming; add egg, blend well; stir chocolate into mixture. Sift dry ingredients together three times. Add dry ingredients, water and vanilla to creamed mixture; blend. Add pecans. Spread in two square pans (7½ inches square) and bake 10 minutes in a 375 degree oven. While hot, frost with an uncooked, honey chocolate frosting. Cream 4 tablespoons butter, use 2 cups of confectioners' sugar; add part of sugar, blending after each addition. Add ½ teaspoon vanilla, dash of salt, 1½ squares melted chocolate and 1 tablespoon honey and mix well. Add remaining sugar gradually.

Graham Cracker Sandwich Cooky

There are a number of excellent honey-flavored graham crackers available on the market. From these one may make an attractive and most delicious sandwich cooky in just a jiffy. And are these good! You should have on hand in the refrigerator plenty of honey meringue. To make it beat the whites of two eggs until very stiff, then gradually beat in ¼ to ⅓ cup of honey. Continue beating until very stiff. Spread graham crackers generously with the honey meringue and sprinkle with slivers of bitter or unsweetened chocolate. Top with another graham cracker and there you are.

Date Fans

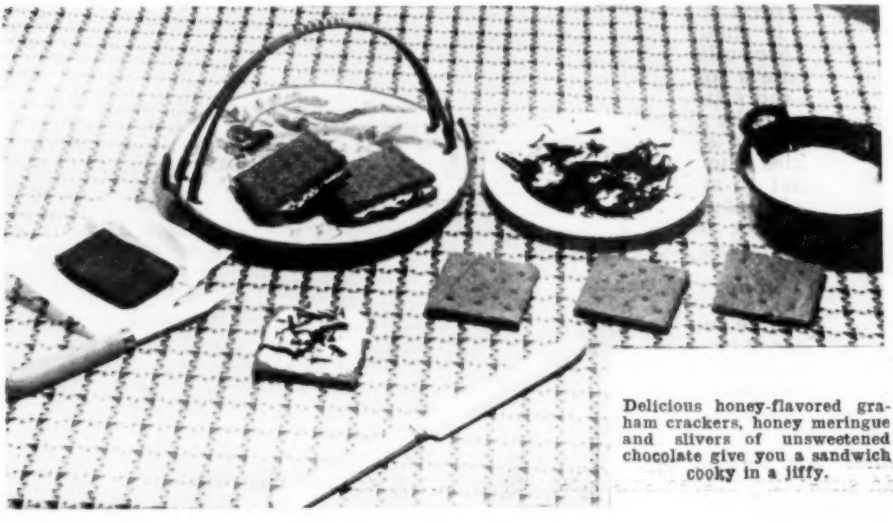
These are not made quite so quickly but are equally delicious. To make, you need: Three-fourths cup milk, 2 tablespoons honey, 3 tablespoons shortening, 1 teaspoon salt, 1 cake compressed yeast, ¼ cup lukewarm water, 1 egg and 3½ cups sifted flour.

Scald milk; pour over honey, shortening and salt in a mixing bowl; cool to lukewarm. Soften yeast in the lukewarm water; add beaten egg and mix well; add to milk mixture. Stir in about ½ of the flour; beat thoroughly and add remaining flour; mix well. Place dough in greased bowl, grease top of dough slightly; cover with waxed paper, held in place with rubber bands. Store in refrigerator until needed. Roll out dough to about ¼ inch thickness, cut in 4-inch rounds. Place a heaping teaspoon of date filling (recipe given above) a little to one side of the center of each round. Fold dough over and press edges together firmly. Gash folded side in 3 or 4 places. Place on greased baking sheet; allow to rise until double in size and bake in a moderately hot oven until delicately browned.

Honey Orange Cookies

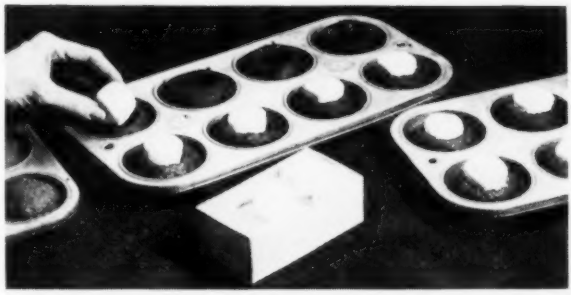
One cup shortening, ½ cup brown sugar, ¼ cup honey, 1 egg, 2 tablespoons orange juice, 2¾ cups sifted flour, ½ teaspoon salt, 1 teaspoon soda, 1 tablespoon grated orange rind and ¾ cup blanched almonds, cut in small pieces.

Cream shortening and add sugar gradually. Add honey and cream well. Add well beaten egg and beat well; add orange juice. Reserve ½ cup of the flour to dredge the almonds. Sift remaining flour with salt and soda and add to first mixture. Beat thoroughly. Add grated orange



Delicious honey-flavored graham crackers, honey meringue and slivers of unsweetened chocolate give you a sandwich cooky in a jiffy.

rind and the almonds. Shape dough in uniform roll, wrap in wax paper and chill in refrigerator. When ready to bake, cut in thin slices, place on well greased cooky sheet and bake in a 400 degree F. oven, about 8 minutes.



Marshmallow gingerbread cup cakes served with honey orange sauce will be a favorite.

Marshmallow Gingerbread Cup Cakes

This is indeed a de luxe affair—and something you'll like. Assemble: One-half cup shortening, ½ cup sugar, 2 eggs, 1 cup honey, 1 cup buttermilk, 1½ teaspoon soda, 3 cups sifted flour, 2 teaspoons ginger, 1 teaspoon cinnamon and ¼ teaspoon cloves.

Cream the shortening and sugar together. Add beaten eggs, honey and buttermilk. Sift dry ingredients together and add to this mixture. Bake in muffin tins, in a moderate oven, 350 degrees F. about 40 or 45 minutes. Remove from oven, hollow out the center of each and in each hollow place a marshmallow. Place under broiler flame and toast slightly allowing marshmallow to melt a little.

Orange Sauce

If you wish something particularly good serve these cup cakes with this luscious Orange Sauce. Combine ¼ cup honey, 1½ tablespoons cornstarch and a dash of salt in the top of a double boiler; add ¾ cup water, 1 egg yolk, slightly beaten, mixing thoroughly. Place over rapidly boiling water and cook 10 minutes, stirring constantly. Remove from boiling water: add 1 tablespoon butter, ½ cup orange juice, 2 tablespoons lemon juice, ¾ teaspoon grated orange rind and ¼ teaspoon grated lemon rind. Serve hot or cold. Makes about 1½ cups.

Honey Date Nut Bars

One-fourth cup butter, ½ cup sugar, 1 egg, ½ cup honey, ¼ teaspoon salt, ½ teaspoon soda, 1½ teaspoons baking powder, 2 cups sifted flour, ½ cup milk, 1 cup chopped dates and 1 cup broken nutmeats.

Cream butter and sugar together until light and fluffy; add well beaten egg, mix well and add honey. Blend well. Sift flour with dry ingredients and add alternately with the milk to the first mixture. Add fruit and nuts. Spread thinly in shallow pans. Bake in moderate oven, 350 degrees about 12 minutes. Cut in bars about 4 inches long and 1½ inches wide. Roll in powdered sugar.

Coconut Honey Drops

Two-thirds cup butter, ¾ cup brown sugar, 2 eggs, ¼ cup honey, 2 tablespoons milk, 2 cups pastry flour, ¼ teaspoon soda, ½ teaspoon baking powder, ½ teaspoon salt, ¼ teaspoon mace, ½ teaspoon ginger, ½ teaspoon cinnamon, and 1 cup shredded coconut.

Cream butter thoroughly; add sugar gradually creaming until light. Add eggs and beat well; then honey; blend. Sift flour, soda, salt and spices together; add alternately with milk, beating after each addition. Add coconut. Drop on cooky sheets and bake in a 375 degree F. oven 10 to 12 minutes.

Honey Hermits

Six tablespoons butter, ½ cup sugar, 1 egg, ½ cup honey, 1½ cups flour, 1 cup quick oatmeal, 2 teaspoons baking powder, ¼ teaspoon soda, ½ teaspoon salt, 1 teaspoon cinnamon, ¼ cup milk, 1 cup chopped dates.

Cream shortening; add sugar, egg and honey; mix well. Sift dry ingredients; add alternately with the milk. Stir in oatmeal; add dates and mix well. Drop from spoon on greased baking sheets; bake in moderate oven, 350 degrees F. about 10 minutes.

May these old favorites of ours help you to satisfy that insatiable craving for more and more and better and better cookies!

Aurora, Nebr.

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Beekeeping in Alberta

W. S. Watson

A Canadian Province with Marvelous Possibilities in Honey Production

The beekeeping industry depends for its development largely on the climatic and soil conditions and on the types of plants growing in the various districts. On this basis Alberta may be divided roughly into three main divisions: A northern section lying to the north of the North Saskatchewan River but extending southward to the west of Edmonton and Red Deer; a central section extending south from the North Saskatchewan River about as far as Red Deer; and a southern section south of this to the Montana boundary.

Southern Section

In the southern section the most striking influence is the drying and warming effect of the southwest or "Chinook" wind. Prairie conditions led to the rapid settlement of this section. For years grain growing and stock raising occupied practically all the attention of the farmers.

Beekeeping as an important industry is a comparatively recent development and is mainly confined to the river valleys and irrigated districts. Where ample water is provided by irrigation alfalfa and sweet clover yield a reliable supply of nectar and this combined with the long hours and many days of dry, hot weather each summer has led in such places to a remarkably rapid development of beekeeping enterprises, some of which are among the largest and most progressive to be found anywhere.

Rapid changes in winter temperature due to the Chinook wind make wintering hazardous and replacement by package bees each spring is the regular practice. Development of the industry here has taken place at about the same time as the greatest development of the package bee industry in the southern states and California. At present California is the greatest source of package bees for this section because it is closer than the other package bee shipping districts and shipment is through higher, cooler regions than in the case of shipments from the Southeast.

Central Section

The central section of Alberta is intermediate in type of soil and climate between the prairie and woodland. The native vegetation supplies some nectar but moisture is often insufficient. The climate in general has not been dry enough to encourage irrigation and successful beekeeping depends chiefly on sweet clover growing in favorable locations especially where moisture is supplied naturally by rivers, ponds and lakes.

Northern Section

The northern section is the newest but the most interesting section and it is here that the greatest future de-

Below:—Alberta woods in winter.
Right:—Apple and plum blossoms in Alberta. The season is short and the growth rapid.

velopment will undoubtedly take place. This section is of special interest as being the farthest north district where highly successful beekeeping is being carried on on the American continent, at least on the eastern side of the Rocky Mountains. The moisture here is usually sufficient for good nectar secretion, the soil is in many places extremely variable so that nectar secretion from any one variety of plant is extended from place to place, while the frequent change of slope and occurrence of muskegs, lakes and streams still further increase the overlapping of the various sources of honey.

Sources of Nectar

In favorable locations native flora may supply sufficient nectar for successful beekeeping or be of importance as supplements to cultivated plants. Alders and willows provide early pollen and nectar commencing before all the snow is off the ground. These are followed by white poplar and "Balm-of-Gilead" and later by wild fruit bloom, chiefly pin cherry, Saskatoon and chokecherry. Dandelions, which have spread to such an extent as to appear as much at home as the native plants on this congenial northern acid soil, yield nectar and pollen from late May to late June and after a pause from time to time until as late as October.

Fireweed is the greatest of all the native honey plants and here yields a very high grade of white honey. Three crops of honey may be obtained from this plant: First, from the older plants; next, from the younger, ranker patches; and later from neglected breaking and summerfallow. In favorable locations patches of fireweed may blossom and yield good supplies of nectar each year for many years.

Sweet Clover Main Honey Plant

Sweet clover thrives in most places in northern Alberta and is rapidly becoming by far the most important honey plant. In favorable years it yields honey from about the first day of July until the killing fall frosts especially where a variety of fields of pasture, hay and seed sweet clover may be reached by the bees. When clover has been cut for seed bees have been observed to gather honey in the late flowers in the shock for as long as a week after it is cut. In the older districts sweet clover may yield from 75% to 90% of the surplus, and the quality is very high.

Alfalfa as a honey plant is not much approved of in the North. When sweet clover and alfalfa nectar are both available the bees prefer the sweet clover. The honey from alfalfa produced here also tends to crystallize early and to form a hard type of honey.

Alsike clover yields nectar just before and at times throughout the sweet clover season but white clover tends to be unproductive of honey. Cultivated fruit plants are a minor but increasingly important source of nectar. On many farms bees are being introduced as pollinizers of crabapple, plum and cherry blossoms.

The low-growing, bushlike type of trees which are best adapted to this climate bloom and produce nectar abundantly and have the advantage to the bees of being less exposed to the wind than higher growing trees. Spraying of the blossoms is not practiced here so poisoning of the bees is not a problem. Native roses which form continuous banks of flowers along many of our roads, and a variety of sedge growing close to water are important sources of pollen.

Native Plants Do Not Attract Bees

Some of the native plants of Alberta which produce nectar abundantly yet are seldom if ever visited by honey bees are of intriguing interest to the beekeeper. Among these is the Labrador tea plant whose round clusters of white flowers and hardy fuzz-protected leaves and stems are very commonly seen on hummocky muskegs. The nectar is evidently resinous in flavor and is gathered by bumble bees. Another is the Arctic bramble, a small herbaceous smooth-stemmed relative of the raspberry, whose pret ty pink blossoms are most common on damp mossy meadows. These and other plants growing in lower damper places are evidently neglected because Italian bees prefer the warmer, drier slopes and ridges.

Package Bees in Demand

In northern Alberta the cold of winter is more continuous than in the south and wintering losses are usually moderate if the colony is strong, well packed in insulated cases and supplied with enough good honey or syrup. Some beekeepers prefer to replace with package bees each spring while others prefer to winter. In

(Continued on page 127)

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Bee Breeding

W. J. Nolan

Apiculturist, Division of Bee Culture, Bureau of Entomology and Plant Quarantine.

[We are here printing entire as a series appearing in consecutive issues, the article on bees which appears in the U. S. Dept. of Agri., "Yearbook of Agriculture", for 1937.—Editor.]

(Continued from January)

Mating Stations an Early Step in the Breeding Program

In spite of many handicaps, the bee breeder has not been idle. During the period when he was attempting to bring the mating of the honeybee under laboratory control, he made such use of natural matings as he could by establishing mating stations in isolated bee-free localities, taking virgins and drones of desired stock there to mate. The possibility, however, that the queen may mate with a stray drone, even in a locality thought to be well isolated from local bees, reduces the value of mating stations in a scientific breeding program.

The first reported use of isolated localities in an endeavor to obtain pure matings of bees was that by Baldenstein *(2)* in Germany in 1848. Breeders in a number of European countries are now carrying out investigations by means of bee-mating stations. In Switzerland the association of German-speaking beekeepers has for a number of decades conducted a well-supported movement, inaugurated by the Swiss beekeeping leader Kramer, to maintain and improve the native Swiss bee by having selected queens mate in isolated localities at stations stocked with drones of desired strains. The mating stations are in charge of personnel from the beekeepers' association. Beekeepers bring virgin queens or queen cells in mating nuclei to these stations and take back the mated queens. The method resembles the use of community-owned sires in cattle breeding.

On this side of the Atlantic such stations have not been used so much in scientific investigations. The notable exceptions are the breeding experiments conducted a number of years ago in Texas by Newell *(21)*, and those by Sladen *(31)*, of Canada, in progress on an island in Lake Ontario at the time of his death in 1924. Even commercial queen rearers have made little use of mating stations, because in this country isolated locations free from wild swarms or colonies of neighboring beekeepers are not easily accessible to most queen rearers. In Colorado, however, a strain of the Caucasian race was maintained for at least 25 years through natural matings in an isolated locality *(1, p. 40)*. Certain commercial queen rearers in this country have attempted insofar as possible to duplicate conditions found in an ideal mating station by endeavoring to rid the territory in the immediate vicinity of their mating yards of undesirable colonies of bees. Their methods have consisted of buying up colonies found in the neighborhood, requeening colonies nearby with desired stock free of charge, paying rewards for wild swarms, and similar measures.

Objectives of the Bee Breeder

What are the immediate objectives of the bee breeder? He may attempt to standardize the various strains now existing that are of economic importance. He may even attempt to develop strains that are more gentle, more disease-resistant, capable of carrying larger honey loads, or capable of flying longer distances than strains now available. He may attempt to develop strains with tongues long enough to secure nectar from floral sources not now available to the honeybee. For some regions it would seem desirable to develop strains that fly at lower temperatures than do bees now commonly found in the United States. This is of particular importance to those interested in bees as pollinizing agents.

The breeder need not await the occurrence of mutations, or an exhausted survey of existing strains, to find some definite character of economic importance with which to begin work. On the contrary, he is able to start at once toward his goal, a bee better adapted to present agricultural demands, since not one but several desirable characters have already been identified among the varieties of honeybee now used in the apiary. Other desirable characters may exist, while still others are to be expected from future mutations occurring either naturally or under experimental conditions.

What are the characters in the available germ plasm with which work may be begun immediately? They are related to disease resistance, color of comb cappings, size of body parts, constancy of color markings, disposition, swarming propensity, and the like. For instance, the breeding of a bee in which are incorporated the long tongue of the Caucasian, the gentleness of the Caucasian and the Carniolan, the white capping made by the common black bee and the Carniolan, the reduced swarming tendency and resistance to common hive enemies and European foulbrood of the Italian, the uniformity of marking of the Cyprian, and the industriousness of the Italian or Cyprian would be a big achievement. Some commonly accepted worker characters, desirable and undesirable, and the races in which they are found are given below:

Character	Race
Resistance to European foulbrood	Italian.
Fighting wax moth	Italian, Cyprian.
Hive cleanliness	Italian.
Clinging to frame during manipulation	Italian, Cyprian.
Running on frame during manipulation	Common black, European brown.
White cappings on honey	Common black, European brown, Carniolan.
Water-soaked cappings	Cyprian.
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Tongue length over 6.75 mm	Caucasian.
Tongue length under 6.25 mm	Common black, European brown.
Long Legs	Caucasian.
Uniformity of markings	Cyprian.
Yellow scutellum	Do.
Gentleness	Caucasian, Carniolan.
Viciousness	Cyprian.
Reduced swarming tendency	Italian.
Excessive Swarming.	Common black.
Propolizing tendency	Caucasian.

BEE BREEDING IN THE UNITED STATES

Investigations of the Department of Agriculture

The Department of Agriculture was a pioneer in providing the American beekeeper with new breeding stock. It began this work by bringing in bees from Europe in an effort to have better blood than that represented by the common black bee, introduced about the middle of the seventeenth century, and as a result is credited with having established the Italian race in the United States through importations made in 1860.

In 1905 the Department sent a specialist around the world, primarily to secure the introduction of *Apis dorsata Fab.*, the largest honeybee known, but the effort was unsuccessful. At that time the Department was distributing queens of the Cyprian, the Carniolan, and, more especially, the Caucasian race. During the last few years it has given further attention to a study of various races. As a result of this work and observations made by beekeepers in general, the recommendations of the Department as to an all-around bee for this country, for anyone other than the bee specialist or fancier, are usually limited to the Italian or Caucasian race.

The Department also led the way in this country in attempts to develop methods for the artificial insemination of queen bees. As early as 1885, the date when it employed its first full-time specialist in beekeeping, it set forth as one of his duties: "To make experiments in the methods of artificial fertilization and, if possible, demonstrate the best process by which the same may be accomplished." Some slight success was reported from this early venture, and a method described in which a fine-pointed syringe was employed, as in the present Watson method, but this early work was not followed up. In 1907 the Department conducted unsuccessful attempts to obtain the mating of queens on the wing within enclosures.

Within the last few years the Department *(23)* has greatly simplified the technique and equipment for the Watson method, reducing the cost of equipment and making it possible to operate on several queens more or less simultaneously, thus increasing the output (fig. 3). Some of the special features of this new equipment differentiating it from that developed by Watson are as follows: Only one microscope is needed in using a large number of syringes; a cheap and easily made manipulator is provided for the microsyringe; the queen is held in a glass tube with only her adominal

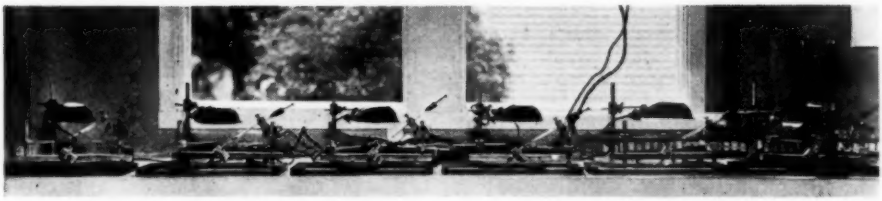

Figure 3.—Multiple set-up devised in the Department of Agriculture for inseminating several queens more or less simultaneously. The set-up shown consists of 6 separate units, each equipped with a microsyringe and apparatus to hold the queen during the operation. One microscope serves the entire set-up, being moved from unit to unit as needed.

tips projecting, instead of being bound by thread to a small wooden block hollowed out to fit her body; and the queen's abdominal tips are spread apart by a pair of metal hooks held mechanically instead of by forceps held by hand (fig. 4). With this equipment the genital opening of the queen can be found quickly under the microscope, and the microsyringe then can readily be brought into correct position for discharging the sperm without injury to the queen.

A durable microsyringe, all metal except for the minute plunger tube of glass that holds the sperm, has been developed from an automatic pencil by substituting a fine wire plunger for the lead and attaching the plunger tube to the point of the pencil. The earlier syringe consisted of a piece of glass tubing drawn out to proper shape for holding the plunger and plunger mechanism, as well as for attaching the plunger tube.

Sperm to fill the syringe is obtained by causing partial eversion of the drone organ by pressure on the drone, after which the bulb containing both sperm and mucus is pulled loose with a pair of forceps. With the bulb still held in forceps, the end containing the white mucus is cut away and the remainder, forming a minute sac containing the cream-colored sperm, is slipped over the point of the syringe. The sperm is then drawn into the plunger tube.

The Department has also modified the Quinn-Laidlaw method for artificial insemination, commonly referred to as a "hand-mating" method, by using a glass tube to hold the queen and a small spring placed in-

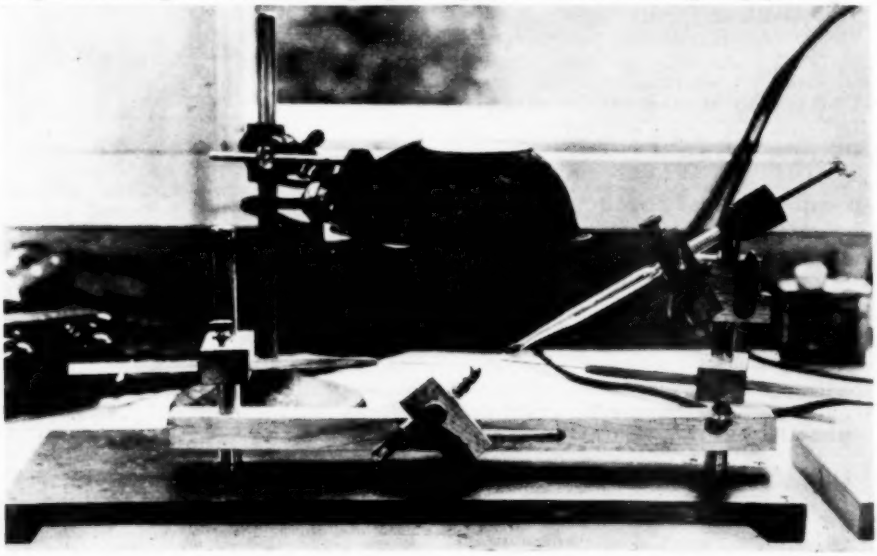

Figure 4.—Separate unit of the multiple set-up, showing queen and microsyringe in position. The microsyringe differs somewhat in construction from the original Watson type but works on the same principle. A less fragile microsyringe, all metal except for the glass point and with the movement of the plunger in and out caused by direct action, has since been devised in the Department.

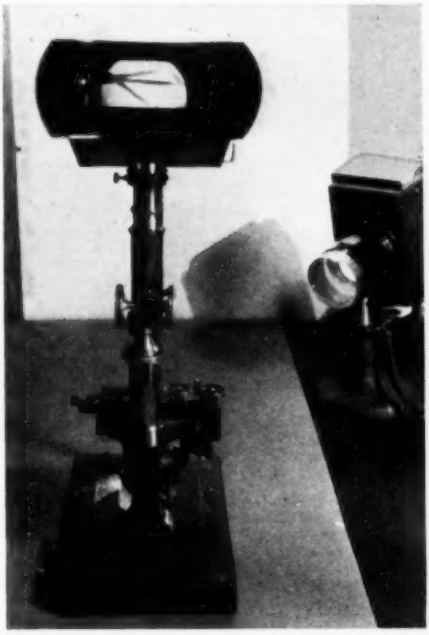

Figure 5.—Apparatus used in the Department of Agriculture for measuring external parts of bees. A micrometer eyepiece with a movable scale is attached to the microscope.

side her abdominal tips to hold them apart *(14)*. A microscope is now used during the process. As when the method was first developed, the drone is so held by hand as to cause partial eversion of its genital organs and is then so placed in relation to the queen that the transfer of sperm will be accomplished after complete eversion has taken place.

Biometric data on common races of the honeybee and on the progeny of various crosses made by controlled matings are being collected by the Department to determine racial or strain characters of a quantitative nature and their behavior in crosses. The data collected so far consist mostly of linear measurements of various parts of the head, thorax, and abdomen. The specimens are mounted on slides under a microscope and the measurements are made on projected images (fig. 5). Those of head parts (fig. 6) include tongue and scapus (the long joint of the antenna). On the thorax they cover counts of hooks on the hind wing and dimensions of the fore wings (fig. 7, *A*) and hind legs (fig. 8). On the abdomen the measurements deemed important are width of the third tergum (the upper surface of the third segment), longest

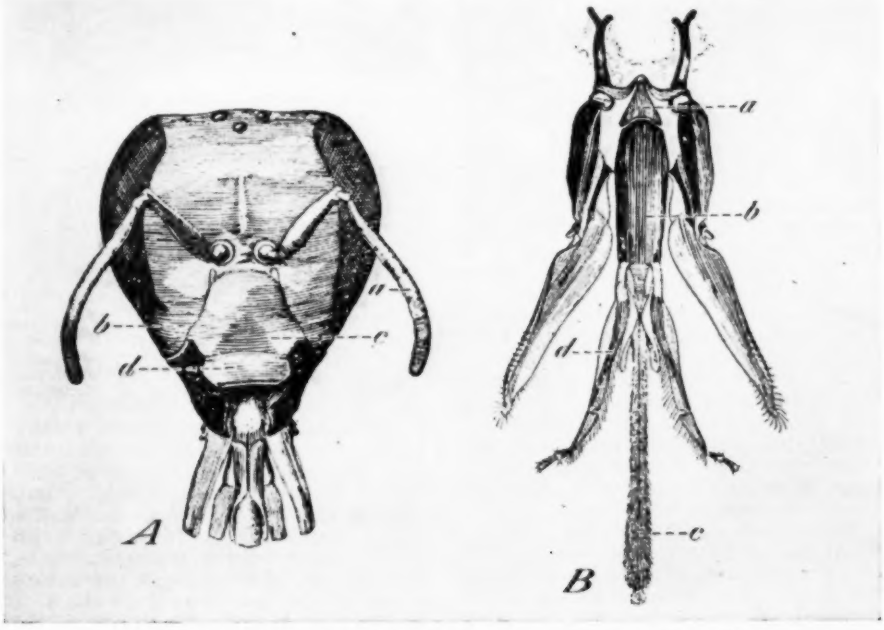

Figure 6.—A, Head of bee, showing: a, Antenna; b, gena; c, clypeus; and d, labrum. Tongue is shown extruded but cut off. B, Extended tongue, showing: a, Submentum; b, mentum; c, ligula; and d, labial palpus. (Drawing by Snodgrass.)

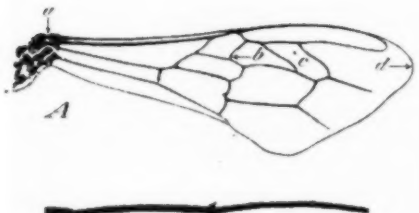

Figure 7.—A, Front wing of honeybee, showing: a-b, Proximal length measured; b-d, distal length measured; c, third cubital cell. B, Cubital cell enlarged to show method of measuring cubital index (a b). (Drawing by Snodgrass.)

width of third sternum (lower surface of third segment) across its left wax plate, and longest dimension of the wax plate itself. The first two abdominal segments, because of their shape and lack of wax plates, do not lend themselves to such measurements (fig. 9).

The size of the foregoing parts is of economic interest as well as of value in distinguishing races or strains, because nearly all of them function directly in the gathering of nectar and pollen and in the production of wax. The tongue, for instance, is of importance in nectar gathering. The wings are important in all activities taking the bees away from the hive. The hind legs carry pollen. The abdominal segments contain the wax plates, and may serve to limit the size of the honey sac.

Characters of a qualitative nature are also being studied. These include gentleness, industry, disease resistance, and the like. At the present time, the Department is engaged in a cooperative undertaking with the States of Iowa, Texas, Wisconsin, and Wyoming, to search for stock resistant to American foulbrood and then to combine the factor for resistance, if any be found, with other desirable factors by breeding.

During the past year the Department has employed a trained geneticist for the first time in its beekeeping work. His immediate genetical problem is to determine whether heritable factors affect supersedure, especially the premature supersedure of queens sold commercially. By "supersedure" is meant the replacement of the queen by another reared by the colony apparently for that purpose. If heritable factors play a part in this behavior, they may lie in the behavior of the queen alone—lack of

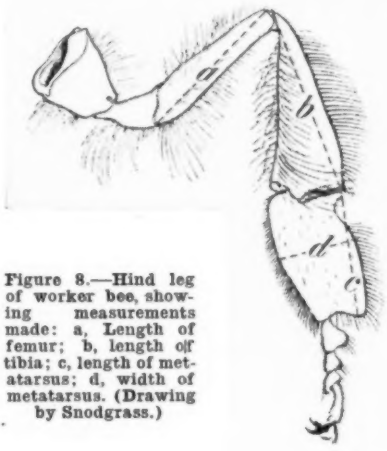

Figure 8.—Hind leg of worker bee, showing measurements made: a, Length of femur; b, length of tibia; c, length of metatarsus; d, width of metatarsus. (Drawing by Snodgrass.)

fecundity, for example—or they may lie in the workers—for example, undue hostility to a queen reared in another colony.

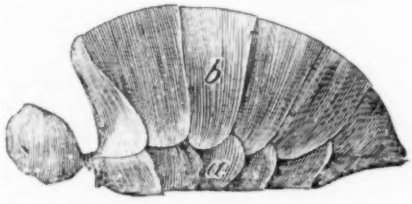

Figure 9.—Lateral view of worker abdomen showing the six abdominal segments, including a portion of the thorax at left: a, Left end of third abdominal sternum; b, left end of third abdominal tergum. (Drawing by Snodgrass.)

[Note.—This is the second installment of the article appearing in the 1937 Yearbook of Agriculture. There is still more to follow. The author of this article, W. J. Nolan, assistant to Jas. I. Hambleton, is to be commended on his masterful presentation of the subject. It is difficult for the average reader to appreciate the time and effort expended in work of this nature.—Editor.]

(To be continued)

From the Field of Experience

PROCESSING HONEY IN JARS

W. H. Hull

A frequent complaint of market men in regard to bottled honey from the small producer is that the honey granulates. For this reason they hesitate to handle it, or, when they do handle it, buy only a few jars at a time, which makes the cost of selling and delivering abnormally high for the producer. A set of wooden trays or flats, as shown in the picture, will remedy this difficulty by making it easy to process the honey after it is packed in jars, without disturbing the pack; and in lots to suit the demands of the trade.

The trays can be made any convenient size; the determining factor will generally be the size and shape of the boiler available for heating. Those shown were made by splitting an old Danzenbaker hive body. These parts fit snugly into the tank of a stock feed cooker. The construction is simple. The tray on the left is for three-pound jars, as shown, that on the right for one-pound jars. Divide the sides and ends of the tray into equal parts to suit the size of the jars, drive a nail at each division point and string wires each way to form the compartments. The slatted bottom of three-quarter inch strips holds the jars a safe distance above the bottom of the tank.

Easily made trays for processing honey in jars. Honey can be bottled directly from settling tanks and processed as needed.

There are several worthwhile advantages for the small producer in this method of processing. The honey can be bottled directly from the settling tanks at extracting time and stored, thus saving the cost of the 60-pound cans that are generally used for storage, to say nothing of the saving in work. By processing in lots as required by one's trade the honey is always delivered in the best possible condition, safe from granulation and with no trace of cloudiness from air bubbles. And, finally, the small bulk of honey in each jar heats much quicker than would the larger bulk in a 60-pound can, and therefore with less deterioration in flavor and color.

By having the water in the tank come up only two-thirds of the way on the jar, natural circulation takes place as the honey heats. Thus no stirring is necessary. Remove the cap from one jar to take the temperature. The other caps need not be removed at all.

On the first run the tray of jars can, of course, be put in when the water is cold. After the first run the water should be cooled down before jars are put in, so that it is not more than 100 degrees hotter than the jars, and preferably less. When putting the jars of honey into water at 140 degrees and running the temperature quickly up to 180, it takes about 15 minutes for the honey in one-pound jars to reach 160 degrees. Three-pound jars take about twenty minutes. Granulated honey requires a longer time. The honey processed at these temperatures showed no perceptible loss of either flavor or color.

Vienna, Va.

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3-POINT PROGRAM ADOPTED BY WASHINGTON BEEMEN

C. M. Littlejohn

The 33rd annual convention held in Yakima in December resulted in the election of I. L. Swain as president, E. B. Ellingson vice-president and R. G. Emery secretary-treasurer.

First and foremost of the three major objectives of the body of leading beemen with their diverse problems in the eastern and western sections of the state will be concerted pulling together to secure an appropriation for funds with which to combat and control American foulbrood.

The second will be the making of a concerted drive to increase the membership sufficiently to raise a lusty voice, backed by votes, that will be

heard and acted upon—in the halls of the state legislature, where the vote-getting politicians are inclined to listen to numbers and large membership rolls.

The third point of the new 1938 program will be furthering the cause of the American Honey Institute and supporting its plans and policies. The east and west sides of the state will be represented by three members selected to serve as committeemen on each of the three points.

Considerable discussion was devoted to spray poisons in orchards and talks by commercial beekeepers indicated that if the problem is not solved the fruit growers will have to seek other means of pollination, since spray poison placed on growing fruit has killed more than 50% of some colonies.

Seattle, Wash.

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OLD QUEENS MAY GIVE SERVICE

Brother Frederick

During the last three or four years I kept a few old queens (two years or older) in three-frame nuclei. In these nuclei I usually keep young queens to be used when necessary. There are 16 of these nuclei in our yard and when these small colonies are of normal strength and some honey comes in, they raise very good queens.

Whenever I meet with failure when introducing a young queen, or when I come to a colony where I can not find the old queen, eggs, or a virgin queen, I let one of these old queens run in the front. Usually this old queen starts to lay at once and after 10 or 12 days I take her away or kill her and introduce a young queen without any further trouble. Since I have done this I have had no trouble with drone layers or worker layers. Of course, I always find some drone layers during the first inspection in spring.

Techny, Ill.

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DIRECT SELLING

J. Gelder, Mgr., Chazy Orchards, Inc.

Here is our honey selling experience. A few years ago it bothered us to dispose of 1000 pounds of honey in one season. Now we retail at our market about 1500 pounds in one week, and our season's sales will be 20 tons.

Our honey has gone directly into consumption and not to jobbers. When we sold to jobbers it used to depress the market. Our honey is the only department that has made us any money, and, bless you, the end is not yet. We will have to increase our colonies or buy honey to supply our trade next year.

There is an amusing side to it. Very frequently some of our "honey" patrons come in with an article they have cut out of some paper or magazine and say "Gelder, you are always talking about the food and health value of honey. I knew you would like to have this" and then usually add that they never realized the value of honey as a food until recently.

Chazy, N. Y.

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A NOVEL BEE HOUSE

B. Linder

This bee house measures 18 by 12 feet, faces south with the narrow side and has the door at the north side. The hives are on shelves, 30 inches above the floor. There are four on the south, eight each on the east and west, making 20 in all. Another 20 can be put on the floor, so the house is really big enough for 40 hives. The supers are stacked under the shelves, in the blind corners and under the roof. The window is covered with

Well protected from both heat and cold.

flyscreen, open on top to give egress to the bees.

The hives themselves are insulated summer and winter, so that for winter packing only the top tray is necessary. The entrance boards are somewhat tilted and painted green, yellow, blue and red. The entrances are separated by small boards, painted in the same color as the entrance boards. To hive a swarm I simply hook a floorboard before the respective hive and shake the swarm on it. The bees do the rest.

Manchester, N. H.

Just News

A recent letter from Flora McIntyre of Pasadena, Calif., to E. R. Root reads as follows, "You will rejoice with me, I know, to learn that 'Children of the Golden Queen' has been accepted by E. P Dutton & Co., and is to be published next summer. That's the best Christmas present I ever had." The manuscript for this book by Miss McIntyre is referred to in detail on pages 400-401 of the July, 1936, Gleanings.

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The Correspondence Course in Beekeeping issued in 1933 and revised in 1935 has during that time ranked first in enrollment among the farm correspondence courses offered by the Ohio State University of Columbus. During the past year the Course has again been one of the leading courses. Beekeepers from 45 states as well as students from Canada, China, Cuba, England, Egypt, Hawaii, Jamaica, Mexico, New Zealand, Palestine, Trinidad, and Turkey have enrolled in the Course. The subject material has been presented in 12 lessons and covers the various principles of bee behavior and modern apiary management. There is no enrollment fee for the Course. Further details may be obtained upon request to Dr. W. E. Dunham, Ohio State University, Columbus, Ohio.

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At the annual meeting of Illinois State Beekeepers' Association held in November the following officers for the ensuing year were elected: Pres., Adam Bodenschatz, Lemont; vice pres., B. E. Beach, Rockford; treasurer, Wesley W. Osborn, Hillsboro; secretary, Hoyt Taylor, Pleasant Plains.

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The winter meeting of the beekeepers of Kansas will be held February 10, during Farm and Home Week, on the campus of Kansas State College, Manhattan. The program is under the direction of Dr. R. L. Parker, State Apiarist, in co-operation with Kansas State Beekeepers' Association. Dr. C. L. Farrar of Laramie, Wyo., is the out-of-state speaker.

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The book "Honey and Health" by Dr. Bodog F. Beck, now in the hands of the printer is a volume of great interest to the general public, the medical profession and the beekeepers. The principal aim and objective of the book is to evaluate honey and appraise its true worth. This book will contain more information on honey as a food and medicine than anything that has yet appeared. The price of the book when printed will be $4.00. The book can be secured for $2.00 if order is sent at once to Dr. Beck, at 116 E. 58th St., New York City.

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Jas. E. Starkey, state apiarist for Indiana, has meetings during February scheduled as follows:

Feb.	County	City	Time
4	Wabash	Wabash	1:30 p. m.
5	Miami	Peru	1:30 p. m.
7	Cass	Logansport	1:30 p. m.
8	Carroll	Delphi	1:30 p. m.
9	Benton	Fowler	1:30 p. m.
10	Newton	Kentland	1:30 p. m.
11	Lake	Crown Point	1:30 p. m.
12	Jasper	Rensselaer	1:30 p. m.
14	Clinton	Frankfort	1:30 p. m.
15	Montgomery	Crawfordsville	1:30 p. m.
16	Warren	Williamsport	1:30 p. m.
17	Fountain	Covington	1:30 p. m.
18	Vermillion	Newport	1:30 p. m.
19	Parke	Rockville	1:30 p. m.
21	Hendricks	Danville	1:30 p. m.
22	Boone	Lebanon	1:30 p. m.
23	Putnam	Greencastle	1:30 p. m.
24	Clay	Brazil	1:30 p. m.
25	Sullivan	Sullivan	1:30 p. m.
26	Vigo	Terre Haute	1:30 p. m.

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The 68th annual meeting of the Michigan Beekeepers' Association will be held in Room 207 of Horticultural Building, Michigan State College, East Lansing, on February 2 and 3. Out-of-state speakers are H. F. Wilson, H. H. Root, and C. F. Muth. Come.

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Beekeepers will be shocked to learn of the death of J. M. Cutts of Montgomery, Ala., on Jan. 9. Mr. Cutts was born Dec. 30, 1870, in Coffee County, Ala. He became interested in bees by reading in the McGuffy reader the story of the great Huber, and started bee-

(Continued on page 125)

COMMENTS ON CURRENT ITEMS

J. F. Dunn

Subduing Robbers

I wish to thank Mr. Francisco for his kindly reference to my monthly column. Either method of subduing robber bees that he mentions will work. Get out your spray gun, put the foot of it in a bucket of water and shoot the spray over every hive that is robbing or being robbed. When the robbing note is silent and the bees have all the fight taken out of them, go to the colonies being robbed; reduce the entrance and lay some grass loosely over the fly hole. The bees inside the hive will work their way through and if any of the robbers attempt to enter the hive those that belong in the hive will take care of them.

Carbolic Acid for Robbing

When a bee gets wet the fight is all taken out of her. A little coal oil or a ten per cent of carbolic acid sprinkled on each side of the flight hole might assist in driving the robbers away.

Winter Well in Unpacked Hives

Mr. Francisco's claim that his colonies in unpacked hives have for four years come through in better condition and gathered more surplus than those in packing cases is rather surprising. Wind protection is just as important as packing and I can understand how colonies well sheltered from the wind and hives well supplied with winter stores might come through, but to depend on it with such a temperature as 24 degrees F. is to my notion courting disaster; at least it would be dangerous here in southern Ontario.

Let me give an instance. A number of years ago a young friend of mine had the same idea. He built a high board fence around his lot and put in about 60 colonies. He had a well sheltered location and for several years wintered with but little loss. A neighbor got the fever and purchased a few colonies. He packed them in paper and lost about two thirds of them. There was probably something wrong in his system of packing. That convinced my friend there was no virtue in packing. I think it was during the next winter that he lost heavily. He bought a lot of packages and filled his hives. A good season followed and he got a good crop. Next winter he again lost heavily. Another cold winter came and he again lost heavily and bought packages. Now he is about cleaned out. He was not a careless man and was very neat and thorough in his work.

Mr. Francisco, I judge, is leading an ideal life. "Happy the one whom the urge of duty and the drawing of love impels in the same direction." My advice is keep right on with your other activities and keep right on (and I would emphasize this point) with your 100 colonies, no more. With these you can try out all the new things in bee culture and get a "big kick" out of it. And if you take a goodly number of bee journals I wouldn't be at all surprised if you were a better informed bee man than the 1000 colony man.

Top Entrance

The top entrance seems to be getting a lot of attention just now. Mr. Frank Labus, Minerva, Ohio, says why not let the bees decide for themselves by leaving both entrances open. My opinion is that either the top or the bottom entrance should be closed. Both entrances would cause a draft of cold air, taking warm air away from the cluster at the top. As far as clogging at the entrance during winter confinement is concerned that can be prevented by turning the entrance block upside down making the ⅜" and 3" entrance at the top instead of the bottom of block.

Splendid Honey Recipes

Blessings on Mrs. Nielsen for those fine recipes in the December number. The candies are way ahead of anything we can buy, and the caramel corn—we made up several batches for our friends and they all want the recipe for that delicious pop corn. A bunch of youngsters come tearing into our house nearly every day either evening or after school and the housekeeper who made up a big batch had a generous sized bag for each one. There was a chorus of um-um and Oh Boy!

We are writing out all those recipes by Mrs. Benjamin Nielsen for our friends.

Honey an Anti-rust

About cleaning the extractor of honey after the season is over; we agree it is wise not to do so. Honey is an anti-rust.

Mr. LeMay's plan of dipping the queen in honey is an old trick of mine. It works O. K.

Ridgway, Ontario.

Spinster

Jane Says:

The Same Old Winter

Sometimes I feel like declaring that this will be my last winter in such a cold country, then spring comes, and I forget all about it. No danger of one growing sluggish, at any rate. If we should,—well, it might mean freezing for us.

But the cold weather, long nights, and the necessity of keeping the home fires burning until late at night, all have their uses, or as the French would put it, *raison d'etre*. This is a wonderful time to catch up with our reading.

One of the small boys in the house had a broken leg, long ago, and the doctor scoffed at my magazine reading matter, and told me I should be reading up on fractures. Why not then, this winter, if bee-minded, read up on bees? Make that our substantial reading,—our study. It would never do to read only on bees. We would surely develop into fanatics or cranks, at least. What we want is to be merely fans, this winter, cranks only during bee season.

I believe even John is growing a bit bee-minded. He is getting a bit fed up on keeping the farm animals fed up. Cleaning stalls after them, bedding down, and then to add to his tale of woe, milking and separating, and all this with mighty little for his labor, no wonder he is fed up. Never a holiday, summer or winter! Tied by the leg to a round of chores! And Mr. Successful Beekeeper has his winter free. He may even spend it in the sunny South, his bees fed, packed securely, altogether out of mind. And no matter how hard a farmer may work, now-a-days, he cannot become even reasonably well off. Blame it on depression, or what you will, that is a fact, in this district at least.

Now remember, I am not advocating bees for everyone. We must have our farmers to carry on, but I do claim they are the poorest paid, the most disregarded in legislation yet the most unselfish, hard-working, and considerate people in the world. My farm up-bringing and birth, taught me those truths, and I believe a good many are forced into farming who were never intended to be, and never will be, good farmers. I believe John fits into that group, hence my urgings.

John Wants Cows

His argument for keeping cows is that they maintain the fertility of the soil, disposing of all his feed right at home. What was that slogan? I think it went something like this: Raising more feed, to feed more cattle to raise more feed, ad infinitum.

I can beat him in that argument, at least I think so. Bees require clover, lots of it, and clover opens up the soil, sweetens it, draws nitrogen into it. Plowed under, it is a wonderful fertilizer, and there are many good commercial fertilizers. Why work so hard for the sheer drudgery there is in it? "Gold dust,"—we term it such to sound more high-brow,—may be supplanted to keep the soil in A-1 condition. If I were a man, I'd be all for bees.

I said "urging" above. I didn't mean that. The way to convince a man, is to talk against a thing. Men are by nature cantankerous, and how they hate being pushed into anything, or "bossed." If one can suggest a thing, when a man is feeling good-natured (after an excellent meal is a good time) then lead him to believe HE suggested it. Use tact, and be rather contrary, presto! the thing is accomplished! We must not be back-seat drivers in the home car, or we may wreck it. If we want to go one way, we must be sure to suggest the contrary. That gives friend husband a chance to exercise his own prerogative, and when he is right, what a satisfaction! You, of course, were always wrong!

Men are like that. And what a thrill a woman gets, knowing she can steer him just the way he should go! One word of advice: keep this sub-rosa; never tell it to another woman,—she would tell her husband, he would put friend husband wise. I'll hand the men one orchid, and here it is,—they stand together better than women do. I don't know why, but women seem afraid to trust women.

(Continued on page 117)

XUM

Two Texas Queen Breeders

E. R. Root

Mr. Miller's Home Apiary.

John G. Miller.

John G. Miller of Corpus Christi, Texas, has the reputation throughout his state of raising very fine queens. They are large, prolific and reared from larvae never older than three hours. He does not try to raise ordinary queens nor a very large number. He sells to a select list of customers and will take no orders that he is not sure he can fill.

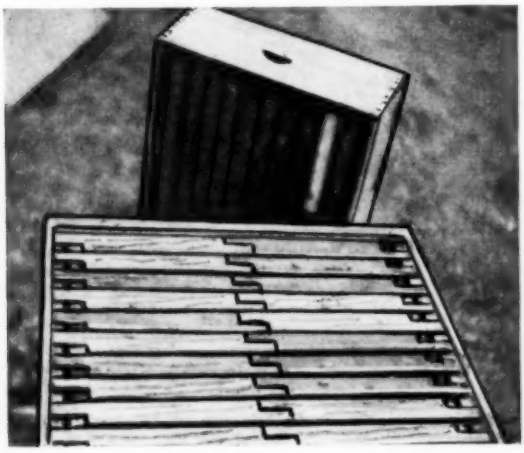
He uses baby nuclei that are similar to what The A. I. Root Company had a few years ago, namely, half-depth frames or frames to fit a shallow super but divisible on a vertical line, top bar notched so as to interlock, bottom bars fastened together so as make a regular shallow frame that will fit a standard length half-depth hive body. These shallow supers have divisable frames and a shallow super is put on strong colonies and combs are drawn out. Brood is reared in these hives. The frames are then divided in a vertical line, four of them put in a nucleus box, here shown at bottom of next column. Note also that the top bars are notched in such a way that they interlock. The frames are therefore used in a baby nucleus or can be locked together and put in a shallow super.

Mr. Miller is one who lost very heavily from airplane cotton dusting and at one time he had 600 colonies that were in the dusting area and out of that number he saved only twelve. His nuclei suffered a like fate but he is one of those men who will not stay down, and he came back again.

He mates his queens in desert area to select drones. Desert matings and rearing from larvae never more than three hours old enable him, he says, to produce a superior quality of queens.

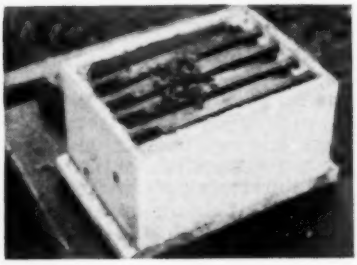
The notching of the top bar is shown below.

To save space and convenience in working, Mr. Miller places his nuclei on top of a strong colony. There may be a little confusion in the flights of the nucleus bees during the short time that he handles the big hives but only for a short time.



Left—Top view of the half-depth, half-length frames locked together in an ordinary Langstroth shallow super.

Below—Mr. Miller's nuclei made up of half-depth, half-length frames.



Mr. A. W. Nations

We next introduce to you another good queen breeder and all-around beekeeper, a man who not only produces crops of honey, but puts it on the market direct. He served an apprenticeship of four years with that veteran beekeeper, A. E. Ault, who later became a brother-in-law. In 1924 he went into business for himself and now has about 600 colonies and about 1,000 nuclei at Donna, Texas.

He has about the best equipment of anything I have seen in all Texas. Not only does he have good equipment, but he has a fine system by which he saves labor but produces a first-class product both in queens and honey.

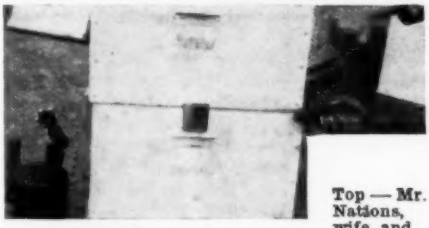
He produces mesquite and orange honey. As the seasons change he goes from queen rearing to honey production, finally to marketing his honey. He is fortunate in having a wife, sister of A. E. Ault, who is also an experienced beekeeper and queen-breeder.

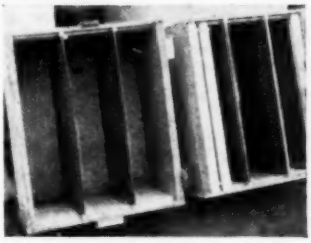
His scheme of shaking bees into packages is here shown. Practically all the experienced bee raisers now sift their package bees through queen excluders. This catches the queen, if there is any. Mr. and Mrs. A. W. Nations and son, Junior, who is also being brought up as a bee and queen raiser are shown at the top of the next column.

Fig. 1, Mr. Nation's shaking box, in the bottom of which is shown the queen excluder as shown in Fig. 2, below.

Figure 2, the excluding wire in the bottom of Fig. 1.

Mr. Nation's branding iron shown in the center of the next column consists of some sheet metal bent in the shape of his initials. This, when placed over a gasoline torch, becomes hot and burns the initials on all his hives.





Top — Mr. Nations, wife and son.

Center— Mr. Nations branding iron.

Bottom — The queen mating box Mr. Nations uses.

Some beekeepers of Texas have had some of their equipment taken away from them, stolen in fact. If any of Mr. Nation's stuff is stolen, he can easily identify it.

Mr. Nation's queen mating hive, consisting of a shallow super divided off into three compartments, entrances at three different points of the compass.

We shall have something more on branding hives later.

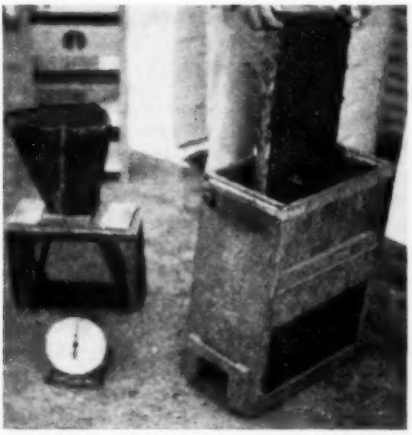


Fig. 1.

Fig. 2.

Editorials

Orthodox Treatment for AFB It is now evident that the orthodox treatment for AFB is to burn combs, bees, brood and honey, leaving the hives, super covers and bottom boards to be scorched out by a flame.

A year or so ago it was believed that 95 percent of the bee inspectors favored this treatment. It is now apparent that 100 percent are unanimous on that point. The bee inspectors of the country ought to know.

The shaking treatment did not clean up the disease. In the second or third year there was almost sure to be recurrence. There is no coming back when all infected material including bees are burned by the inspector himself, and before he leaves the premises.

In this connection be sure to read the article entitled "Shaking or Burning" by H. M. Krebs, page 73, this issue.

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Don't Blame the Queen—Always Not so long ago we read the following statement by an experienced beekeeper, "many queens are considered poor, but in fact never had a chance to prove their value because of some beekeeper's failure to provide proper conditions."

We are doubtless agreed that this statement is true. What, then, are the failures of some beekeepers to provide proper conditions for queens to prove their real value?

First, and perhaps the most common failure, is the tendency among beekeepers to scrimp on stores. Colonies must have an abundance of honey and pollen to permit of normal colony development to give queens a chance to do their best work in egg laying.

Beekeepers may also fail to supply colonies with sufficient comb space for queens to use in egg laying. Likewise a comb consisting mainly of drone or hybrid cells left near the center of the brood chamber of a hive will sometimes hamper a queen and practically cause suspension of egg laying for a time, especially in early spring when the weather is too cold for the colony to expand its brood nest beyond this poor comb. Make sure that all combs in brood chambers consist of worker cells.

During early spring a queen in a weak colony may not be able to lay all the eggs she is capable of laying, because there are not enough bees in the hive to properly care for the brood. As a rule, the queen in such a colony is normal and needs only more bees to take care of the brood she is capable of producing. The addition of a two-pound package of queenless bees will correct this condition.

And so, we should see to it that the queen has an opportunity to do her best work before we brand her as a poor queen.

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Don't Stress Crop Shortage There appears to be a tendency among beekeepers and honey salesmen, during a season when the honey crop is short, to emphasize the scarcity of honey, apparently with the hope that the prospective customers may take advantage of the shortage and stock up.

Just recently a number of our readers have said that this is the wrong approach and that scarcity should not be over-emphasized in merchandising honey, even though there is a short crop. The public may get the impression that the source of supply may give out and this in turn may cause honey customers to use substitutes for honey.

It does seem as though the crop shortage approach is poor psychology. At least it may not be any too good for our industry. We do hope that in the immediate future honey production may be increased, at least to the point where no shortage may occur. Our industry is sorely in need of more honey, more beekeepers and more bees.

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Have Top Entrances Come to Stay? For years top entrances have been regarded as being in the experimental stage, but enough evidence has now come in to indicate that they will become a permanent requisite in outdoor wintering of bees. Reports are beginning to accumulate, showing that many times hives with bottom entrances only,

get clogged with snow and ice and sometimes with dead bees. It is here that top entrances give sufficient ventilation and in the end save colonies of bees that would otherwise be counted among the dead.

The question then arises; shall there be top entrances only, or a combination of top and bottom entrances? Experiments thus far seem to indicate that a combination is better than either one alone.

The strange part of the whole matter is that top entrances are especially recommended for use in very cold climates, and largely for the reason that the moisture around the cluster can escape, leaving the clustering room dry.

To those who have already packed their bees with bottom entrances only, using slater's felt, it is not too late to put a ½" auger hole half way up the front of the top story.

When two entrances are used, the bottom entrance is contracted down to about 1"x⅜" and the entrance cleat is put in with the notch facing up so that there will be a clearance, even though there may be half or three-quarters of an inch of dead bees at the entrance. If the entrance reducer cleat is placed with the notch facing down, the entrance may become clogged with dead bees.

Our experiments conducted at Medina for a number of years favor the double entrance, the bottom one being very small, about ¾"x⅜" and the upper middle entrance, a ⅝" auger hole through the front of the food chamber, half-way up.

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Operating Out Apiaries Economically

In leafing through the pages of "The Beekeepers' Review", one of the best bee journals ever published, and then edited by W. Z. Hutchinson, at Flint, Michigan, we find on page 363 of the December, 1903, issue the following:

"Mr. E. D. Townsend of Remus, Mich., who last year managed an apiary, 50 miles from home, with only four visits a year, this year managed it with only three visits—once to remove winter packing and put on two empty stories of empty combs, once to extract and once to pack for winter."

Mr. Townsend certainly had operating costs down to the minimum. Transportation facilities in those days being much different than at present, made it necessary to cut out all unnecessary trips. Each trip had to be called for manipulations and to make each trip count.

At present those of us who are operating out apiaries with improved facilities,—fast motor trucks and good roads, would do well to take a lesson from Mr. Townsend. All in the world our bees require during the active season is food and comb space. If in the fall we reserve a full super of honey for each colony—a food chamber—colonies are not likely to run short of food. And if we supply ample comb space, which means supers, in plenty of time, bees are not likely to swarm.

Most of us are too stingy with supers. We wait too long before putting them on. Oftentimes congestion occurs within the hives and of course cells are started and swarming results.

In managing out apiaries it is very necessary to plan the work in advance and to make each trip count for the most. A truck going to an out yard should never be run empty. We must keep ahead of the bees. When prospects for a crop appear favorable it does no harm to put two or three supers on each colony at once and in advance of the time they are actually needed. This tends to simplify management, also to reduce operating costs.

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Dusting of Fruit Trees on the Wane

It has been known for some time that insecticides, applied on fruit trees in the form of dust from a blower, are terribly destructive of bee life. Unless conditions are exactly right, the dust is liable to be blown onto trees where the petals are just in bloom and where bees, working on the blossoms, would be poisoned. Not only that, but the dust falls on cover crops, and pasture fields and damages not only cattle, but farm crops in general.

While one can cover more territory with a big blower, in a given time, fruit growers are now beginning to learn that the application of dust is the means of killing off some of their best friends, the honeybees. They have also learned that it requires more poisonous material, because much of it is not only wasted, but does more harm than good. A good fruit grower is not so short-sighted as to fail to see the damage to bees and so in most cases he is going back to the application of insecticides, distributed in the form of water spray

upon the trees, after the petals have fallen. In this way the poisons, usually arsenate of lead, are applied only where they are needed.

We yet have the very serious problem of poisonous dust applied by the airplane over many square miles of territory to destroy noxious insects attacking cotton and other plants of like nature. Thousands of colonies of bees in Texas and California have been destroyed through airplane dusting. Beekeepers have been seeking a remedy. One brought suit in the lower Court which rendered a verdict for the plaintiff. The defendant then carried the case to a higher Court, which confirmed the decision of the lower Court. Further details will be given by Judge Leslie Burr of California in an early issue of Gleanings.

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Merchandising Honey From a recent issue of "The Glass Packer" we note that the California canners have had their troubles in marketing peaches. The trouble was that the prices were too high for consumers.

In seeking a solution to this problem a plan is being launched whereby all peaches in California are to be packed under a Canner's Industry Board and each canner will sell from the pool at a price fixed by the Board. Returns are to be proportioned according to the number of peaches each canner put into the pool.

If this plan is successful it will be because prices are kept under control —but not so high that they limit consumption.

In the future, as honey production increases, some such plan may have to be developed in selling honey. At least there needs to be a definite, businesslike merchandising program for honey and a friendly coordination of effort among all organizations connected with the beekeeping industry.

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Bee Culture Laboratory in the Clover Belt Our readers know of course that under Jas. I. Hambleton, the Generalissimo of beekeeping research work, with headquarters at Washington, D. C., there is a bee culture laboratory at Beltsville, Maryland, one at Baton Rouge, Louisiana, another in Davis, California and still another in Laramie, Wyoming. There is a corps of workers at each station and their work is to help solve the beekeeping problems connected with each of these areas.

One has only to look over the past year of Gleanings to see what has been accomplished at these stations. It has been a work worthwhile in solving some problems. Work is still needed in the white clover belt.

For some time back a need has been expressed for such a station located somewhere in the so-called "White Clover Belt". W. E. Anderson, Entomologist for the State of Louisiana, who did so much to get the station started at Baton Rouge, was made chairman of a committee of the American Honey Producers' League, during the Washington meeting, to see what can be done for the establishment of a station in the white clover belt, where most of the honey is produced. Details are not yet worked out, but we are encouraged to believe that such a station, with moderate equipment, will eventually be established. It is needed.

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Unbalanced Conditions May Cause Supersedure It has been said that when we violate nature's rules we suffer. What happens when we cause an unbalanced condition within the hive that would not occur in nature?

For example, three pounds of young bees with a young laying queen are shipped north in a combless package, are fed sugar syrup enroute and in some instances are put into a hive containing frames with full sheets of comb foundation and are fed sugar syrup during early spring, before pollen and nectar are abundant. Some put packages onto combs of honey and pollen.

In nature a populous colony casts a swarm which usually issues during the height of the season during settled warm weather. The swarm consists mainly of old bees and the old queen.

The thing that occurs in nature is altogether different, in fact, the direct opposite of what happens under the man-made method of making increase.

If, as some think, early supersedure is due to queens not being properly reared, then such queens would be superseded early regardless of the kind of environment experienced after being put into hives. On the other hand, if queens are normal when put into hives, any abnormal supersedure that might occur might be caused by an abnormal environment, due to unbalanced conditions within the hive.

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From North, East, West and South

SOUTHERN CAIFORNIA, January 3.

Weather: We are having true Southern California weather, warm balmy days mixed with sunshine and skies full of slowly drifting clouds that rise somewhere over the ocean and travel eastward and no one knows what becomes of them after they pass over the mountain ranges between California and Arizona. A little rain has fallen since our last letter, but we are still a long way below enough to encourage the beekeeper in the way of crop prospects for 1938.

Honey Crop: The few eucalypti that we have around the yard are bending to the breaking point with pods just ready to burst into bloom. This tree often yields nectar that amounts to a fair honey crop where there are large tracts of blue gum trees. Alfilerilla has started in many places but unless we get sufficient rain to keep it going it will soon dry up and be over for this year. All nature is ready to start and a little rain is all that is needed.

Prices: They are a little better than at our last writing. Many think that the new year will see more activity in the demand for honey. Some sales have been made at satisfactory prices. Considerable of the crop has left the hands of the beekeepers but a few are still holding, hoping for better prices, a condition which happens every year.

Miscellaneous: We had a Christmas card from an old schoolmate living at Crescent City, in extreme northwestern California. With his other remarks was, "We have had thirty-two inches of rainfall". We have had less than three inches here. It hardly seems possible that there could be such a difference in the same state.

Seldom do we hear about foulbrood. When we find a case we immediately remove the colony to a safe distance and destroy it. In years gone by we treated infected colonies but with increase so easy to make we feel that it does not pay to treat. Where this "occasional" colony picks up the disease we are unable to determine but all beekeepers seem to have the same trouble, no matter how careful they are.

We visited a beekeeper a few days ago who was nailing bottom boards. They were of redwood which is almost impervious to rot when placed on the ground. The thing that was different from most bottom boards was that the depth under the frames and the entrance was full seven-eighths of an inch. This man winters all colonies in two stories and if the brood is not in the top story in the early spring he reverses giving plenty of clustering space below the brood nest. This manipulation together with the deep entrance he feels is accountable for the very low percentage of swarming he has.

Bees are in good condition and colonies are beginning to build up nicely. They have from one to three frames of brood and, generally speaking, sufficient stores. Beekeepers leave much more honey for wintering than in former years. If the two-story colony weighs one hundred pounds in the fall it is just about right.—L. L. Andrews, Corona, Calif.

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NORTHERN CALIFORNIA, Jan. 4.

Weather: Whether we like our weather or not, we do have weather and at times we have a variety. For the past month we have had the "unusual" variety. We had a warm fall with plenty of rain. Here in the Bay Region we are two inches above normal. Last year at the same time we were eight inches below normal. Our conditions for this time of season could not be much improved. It is a fact that eucalyptus, our chief honey producer, is three weeks in advance and this is true of other wild flowers. If the weather continues warm this will be all right—if we should have a week of cold, rainy weather the result would not be so good.

Farther north we have had severe floods and beekeepers have had heavy losses. So far the reports received indicate a loss of between ten

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and twelve thousand colonies. The loss will be felt more by owners of small lots of bees than by commercial producers. The fine cooperative spirit that exists today among beekeepers will go far toward helping make up the losses.

Markets: The local market for honey is slightly above that of last month. Stores report sales above normal. Some of our larger producers are holding their honey.

Miscellaneous: Inspection is going on at a fair rate for so early in the season. Many beekeepers have found that inspection can be done early to a better advantage than when the hives are fuller of bees. There is very little complaint from beekeepers against the inspection service. The reports coming to the office of the State Association show very plainly that the beekeepers realize that our system of inspection has saved the industry. The few districts where outbreaks were reported late in the summer will receive early attention.

Our beekeepers are learning to ask for assistance from the inspection service, the State Association and the University, and they are receiving it promptly. The demands on Dr. Eckert are more than he can fulfill. We get some satisfaction in being able to tell him he has helped to make conditions as they are by his willingness to lend assistance to beekeepers whenever the opportunity presents itself. The fine work of the Doctor is felt in every part of the state and conditions are as they should be. However, he needs assistance. The beekeepers asked for this assistance at their last convention and the University assures us it will be given just as soon as conditions will allow it. In the meantime we can help ourselves and Dr. Eckert will agree with us that as long as we are doing this we are not losing ground.—Cary W. Hartman, Oakland, Calif.

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BRITISH COLUMBIA, January 4.

Weather: In discussing the weather of this province one is taking in a lot of territory, with a range of climatic conditions varying from four to two hundred inches of precipitation annually. Speaking generally, we have enjoyed a very mild winter to date, though since November 1 snowfall and rainfall have been exceptionally heavy, tying up a good deal of highway and railroad traffic during part of the Christmas holidays. We welcome the extra moisture as the 1937 crop was cut short by drouth. Bees were enjoying partial flights here on December 21, and also on January 2, so should be in good condition to stand the balance of winter. Bees often work the willows locally early in March so we are hoping for an early spring. Brood-rearing ceased much earlier than usual last summer and we will be interested to note what effect this has on successful wintering.

Crop and Market: Quality of the 1937 crop was good with samples of B. C. honey sent to Ottawa for analysis averaging 15.7% moisture. The 1936 sample from this section checked at 14.4% moisture which is not uncommon for this dry belt. Little difficulty is anticipated in marketing and most of the honey produced in the province goes directly to retailers and consumers so that wholesale distributors have to depend on importations from other provinces for their supplies, and honey from three provinces is competing with the local product. One peculiarity of the present market situation in Canada is that wholesale prices of honey in Quebec and the Maritimes are 25% higher than in Manitoba and all provinces west, according to the Dominion crop report. Ontario has for years been sending us large quantities of honey via the Panama Canal but we suggest the time seems to be ripe for Alberta and Manitoba to ship some of their surplus East by the same route and, for selfish reasons, we would welcome such a move.

Miscellaneous: A movement is under way to change the Provincial Apiaries Act so as to provide for the annual registration of all apiaries as it is found that with the present system of single registration the lists quickly become obsolete and the inspectors lose a good deal of time hunting up apiaries that no longer exist. It should also give a more accurate count of the actual number of colonies in operation.—G. F. Pearcey, Kelowna, B. C.

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SOUTH WESTERN IDAHO, Jan. 7.

Weather: The fall and winter so far have been unusually warm, or above normal, with lots of rain. In fact, more moisture fell this last fall than in years, which leaves the honey plants in excellent condition for another season. While rain fell in the valleys the snow piled up in the

higher mountains. A year ago we had real winter weather with snow and below zero weather as compared now with 23 above the coldest and 40 above during the day. Unless winter comes within a few weeks it looks as if we will not have a hard winter, and after the last two winters I feel that we are entitled to this mild weather.

Market: The local market is holding up very well. There seems to be some honey in the hands of the producers, especially those holding for 6c. Most of the honey moved brought from 5½ to 5¾c. Beeswax is in good demand with the price satisfactory.

Bees: Most of the bees were packed last fall, and seem to be wintering well. The warm fall may have caused them to use up considerable stores but I doubt this as I believe most of the time the weather has been about ideal for wintering.

Miscellaneous: I regret to mention that we have lost one of our bee men, Frank F. Stockwell of Cascade, Idaho. He was injured in an auto accident near his home and died two days later on December 30. He was 47 years old and leaves a wife and three small children as well as a host of friends. He was formerly located at Parma, Idaho, and was well known throughout this part of the state having kept bees for the last 20 or 25 years. His wife and family have our heartfelt sympathy.—A. D. Wood, Boise, Idaho.

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OREGON, January 7.

Weather: Oregon has experienced a mild winter up to the present time. So far, we have had no freezing weather and only a few nights have we had frost. As a result, our bees are wintering well and the honey flora appears to be in excellent condition. We have had one period of threatening high water, but no special damage was apparently done as far as the beekeeping industry is concerned.

Honey Sales: Honey had been moving moderately well until the Portland strikes came on. As a result during late November, December, and early January there has been somewhat of a slump in sales. The Christmas season had a tendency to increase the sales for beekeepers who took advantage of the opportunity to advertise the use of honey for Christmas candies and cakes. Otherwise, sales dropped off during that period. With honey looking up at the present time, there is not much doubt but that the 1937 crop will be cleaned up before the 1938 crop appears on the market. Prices have not advanced to any extent.

Miscellaneous: During the past fall the writer has been giving broadcasts over Station KOAC twice each month. Beginning with January, we will broadcast once each month. These will be given the second Friday of the month at 12:15 P. M. during the regular Farm Hour of Station KOAC.

During the fall months the writer was conducting a course in Beekeeping under the auspices of the Extension Department of the State System of Higher Education. Portland classes were held at the Lincoln High School. The enrollment was 20. There is considerable interest in having this class repeated during the spring term. Anyone in the Portland area who would be interested in being a member of the class if this course is repeated, may communicate with the writer.

We have had an unusual number of inquiries from beekeepers outside of the state of Oregon who are interested in locating in the state. We endeavor to serve these people as best we can, but at the same time we make an effort to keep them from crowding in on our beekeepers who are already located in the state. We have recently had inquiries from California, Nevada, Iowa, and other eastern states. —H. A. Scullen, Corvallis, Oregon.

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TEXAS, January1.

Weather: During December bees were kept at home for thirteen days due to rainfall. The precipitation for the month was 7.66 inches which is 4.84 inches above normal. Accompanying the days it rained were eight additional cloudy days during which the bees did not leave the hives. Of the five clear days only three were sufficiently warm to arouse the bees. The result was heavy cleansing flights similar to those in the North. The total consumption of stores during this period was very small due to the fact that the normal

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temperature for the period was just at the clustering point and on three of the clear days bees brought in some little nectar and pollen from belated broomweed and mistletoe. Numerous beekeepers were contacted during the month. Throughout the state it appears that the bees are considered to be in normal winter condition with ample stores. The beekeepers have utilized this month of inclement weather for repairing bee fixtures and preparing for a honey crop next year. Throughout the state the weather from August to December was dry and warm. This enabled farmers and beekeepers to complete all of their outside work. Farmers had plowed all land that they expect to put in cultivation in 1938.

Prospects: The abnormally abundant rains of December were absorbed to such an extent that barring some unforeseen weather condition an abundant crop of honey and farm products are expected in 1938. Already horsemint and other annuals are abundant.

Market: Honey salesmen report better than normal sales during December and give the information that the Texas honey crop has largely left the hands of the producers. All the honey left is being held for feeding next spring.—H. B. Parks, San Antonio, Texas.

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ARIZONA, January 3.

Weather: So far we have had a very mild or warm winter. Also it has been very dry to date. We have had two light showers the past three months, and only one or two snows in the higher elevations. On several occasions lately the thermometer has reached near the 80° mark. Only two mornings have I found ice so far this winter.

Honey: Very few calls for honey have been received. There is known to be two or three small lots yet in the hands of producers, but this will no doubt be called for before the new crop arrives.

Due to low prices the past season several small beekeepers have sold out. Also there is a tendency on the part of many to let their equipment go without paint.

With the Government now trying to guarantee all wages and hours of labor, we wonder what the producer will get in the way of a "guaranteed income".

Miscellaneous: As stated above we are in need of moisture for the mesquite and catsclaw to come out well in the spring. There is yet time for good rains for the coming season though they have been minus to date. We usually get some rain during the winter or spring.

In some areas bees are in fine condition with plenty of stores. Bees have been watering almost every day for the past several days. Along the lower Gila River I observed bees bringing in pollen, but not in very large quantities. This was no doubt from mistletoe. Pollen will be plentiful there a little later from cottonwood and willow. In the area just mentioned colonies are very strong and short of stores, due perhaps to warm weather and brood-rearing. Bees that are very active use more honey than those that are not so active. In some areas, as usual, bees will have to be fed until nectar comes in enough to support them.

. Lack of rainfall does not affect the yield per colony as much in the farming area as it does over the desert region, which means much of the mesquite and catsclaw areas. However, rainfall is necessary for the farming area.—Leslie Wedgworth, Oracle, Arizona.

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NORTH DAKOTA, January 7.

Weather: Weather conditions were improved a lot over the previous year. The more adequate rainfall of 1937 helped to re-establish sweet clover over much of the beekeeping area of the state and improved prospects considerably for the coming season.

Conditions: In general, beekeepers reported that the nectar flow tapered off in early August. Such was the experience here at Fargo, except for a light intermittent flow that continued into September. When it came time to check colonies for wintering, it was found that although they were well stocked with young bees and had a good reserve of pollen in the combs there was some lack of honey in the lower hive bodies. Where this was not remedied, it is probable there will be colonies lost by starvation.

Reports of late, however, indicate that colonies are wintering satisfactorily, both in cellars and in packing cases outdoors.

Miscellaneous: Some concern has been expressed in regard to the impending grasshopper situation for the coming season. The forecast based upon a carefully conducted grasshopper egg survey, indicates serious trouble over a widespread area, extending from the southeastern portion of the state in a northwestern direction. In general, the eastern counties comprising the Red River Valley and much of the northern and western areas will be practically exempt from grasshopper trouble.

For the portion of the state confronted with the grasshopper situation it is estimated that 35,000 tons of poisoned grasshopper bait will be required to control the insects and protect the crops. Beekeepers will do well to participate in grasshopper control activities wherever the insects are sufficiently abundant to damage sweet clover and other nectar producing plants. Results of the 1937 grasshopper poisoning campaign waged in 20 of the more heavily infested states showed an average of $51.78 in crops saved for each dollar spent on control effort. Present trends in grasshopper control work indicate that there will be an increasing use of machines for spreading the bait, since the machines are easily constructed and spread the bait more rapidly and uniformly than is done by hand.

An unusual amount of interest is being manifest judging by the many requests received from beginners and others for information on beekeeping. It would appear that the improved prospects for sweet clover and the better soil moisture conditions have stimulated this renewed interest.—J. A. Munro, Fargo, North Dakota.

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NEW YORK, January 9.

Weather: Bees had a flight about Thanksgiving Day. Since then it has been too cold for flight. Today is the coldest so far this season, being a plus 10. We have had considerable wind and much snow, with traffic in some sections (especially Buffalo) practically paralyzed for several days in mid December.

Markets: Honey prices started off well but lasted only a few weeks. There has been practically no demand in wholesale trade lately and the market is very dull at this time.

So far as I can see, so-called "prospects" are about average, or a little above as to clovers and a trifle below on condition of bees.

Miscellaneous: The most interesting development in New York beekeeping during recent years is the increasing movement of bees to southern and south Atlantic states for the winter and early spring months, then bringing them back to New York for the major honey flows. About two or three to one increase is secured while the bees are South. The colonies returned North are composed of young bees which forge ahead rapidly.

As in all beekeeping, practices differ with different operators. Some take the bees down early during the fall, others put them in the cellar for the first part of the winter then take them South very early in the spring. Some who have tried both methods report that there is very little difference in results, except that colonies consume a greater amount of food during the winter months setting out in the South than they do in northern cellars or even in outdoor packing in the North. This is no doubt due to the frequency of flight and more or less limited brood-rearing during the winter. Roads are usually much better, being free from ice and snow and consequently much safer and pleasanter for fall moving than late winter or early spring moving. And then there is a considerable saving of labor in moving the bees direct from the summer location to the South rather than via a cellar. Both practices have their advantages.—H. M. Myers, Ransomville, N. Y.

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FLORIDA, January 6.

Weather: The last two weeks have been springlike, warm and sunshiny, the temperature ranging around 70° during the middle of the day. However, during late November and early December the mercury was down to 20°. The citrus fruit was damaged some but the trees escaped. So far there has been nothing to damage the prospect for a honey crop from this source.

Northwest Florida experienced extreme cold weather from November 20 to December 15. The ground was frozen and ice formed over shallow

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ponds. However, weather of this kind does not affect honey plants; in fact, it helps by keeping them dormant.

Honey Flow: The fall producing plants were a disappointment in central Florida. Excessive rain cut the goldenrod and sunflower short. In some localities bees produced enough honey for winter and in other locations there was almost a complete failure. This shortage meant light colonies and feeding. It is a question whether feeding weak colonies is practical. I believe it is best to unite them and then feed a few good ones.

In Northwest Florida bees were put into winter in extra good condition. The late summer and fall flows were cut short by rain. As no honey was extracted bees were left much more than they will consume in a normal spring. But too much is better than not enough. Plenty of honey and good queens are the best insurance for a crop.

Bees in Central Florida are working well for this time of year bringing in pollen and nectar, in favored locations, more than their daily needs. Red maple is in full bloom and bees are working it nicely. This plant is supplying most of the nectar and pollen now. There is brood in all stages. Some colonies have emerging brood. This is nothing unusual as brood-rearing rarely ever stops in this locality.

In Northwest Florida bees are bringing in some pollen but very little nectar as the maple has not begun blooming. Some colonies have a few eggs but nothing much in the way of brood. Colonies build up much faster here when they start than in central Florida, even though it is only one hundred miles farther north. But what a lot of difference a few miles make.

Prices: No advance in wholesale prices. Retail prices are about the same as in the fall. Very little honey left in the hands of the producers. Sales are slow, not up to expectations.

Miscellaneous: Plants are all in excellent condition. Unless we have a heavy freeze conditions are favorable for an orange honey crop. We need it as last season was almost a complete failure throughout the state. However, experience teaches us that the best time to figure the crop is after it is extracted.—N. Forehand, Deland, Florida.

NEW MEXICO, January 12.

Weather: The entire state of New Mexico thus far has experienced a very mild winter. Only light snow flurries have occurred in the Sante Fe National Forest and vicinity.

Four inch snows are about the maximum thus far. We, of course, expect more moisture later and it will be much needed with the exception of the mountain beekeepers. Temperatures have not gone lower than six above on an average and here at 8600 feet the mercury has dipped under zero only a time or two.

Bees were well prepared for winter this year as all the fall flowers had ample time in which to bloom, fade and seed. Here at our elevation the bees were not put in the cellar until December 2—which was a fine sunny day during which the bees had a good last flight.

Thus far outer temperatures have not varied the cellar temperature one degree from the 42° it has held since closing the outer door.

Market: As one of the smaller producing states, New Mexico has not had quite the marketing worries that have been the lot of other states. The crop has practically all been moved. Prices were the same as last season and it seems that outlets for the crop have been materially strengthened by the fact that New Mexico is situated in the midst of three major producing areas of the West, namely, the Arizona-California market, the Colorado and adjacent producing states, and the Texas production. Whenever one of these areas shows low production, this state receives inquiries from them, enlarging the potential users of honey who can with proper cultivation be made definite and annual outlets.

Miscellaneous: Producing honey in a state that has no bee laws and no bee inspector might seem more of a hazard than it really is. This state has, however, very few cases of foulbrood. After three years I have never had a case appear. Another blessing in the mountains is the absence of moths. A simple excluder is all that is necessary to keep combs over until their time for service.

We are trying an experiment here at this altitude. The white biennial sweet clover is being cultivated on 100 acres to ascertain its worth as a honey scource, in addition to its value for feed.—C. H. Baltzley, Pecos, New Mexico.

ONTARIO, January 7.

Another month has rapidly passed, and today I find myself trying to concentrate on matters pertaining to beekeeping, while at the same time it is hard to keep from speculating as to what luck the boys are having with a party of over twenty for the day, at a place about 30 miles from home—after the big hares, of course.

Weather: The weather has been quite normal with no very mild days and no very cold ones. Only three mornings so far this winter has the mercury gone below zero, and then only for a few hours. Bees appear to be wintering all right so far. Clover has been covered locally with about six inches of snow for the past four weeks and as forecasts say "much colder with snow tomorrow" there is no immediate danger of the clover being exposed.

Market: Honey is moving slowly and while it does not appear likely that much of a carry-over will be in evidence by next July, yet it is quite possible that the available supply will care for the demand. Short crops of honey, or other commodities for that matter, are somewhat like having a small chicken for dinner with but three consumers in sight at time of preparation. Just as we are ready to sit down to dinner two unexpected guests arrive, and, wonder of wonders, some of the chicken is left. When people hear of a short crop of anything, almost unconsciously they cut down in their buying of that article and, of course, the short crop holds out all right until the next crop is on the market. If there is a big crop everybody buys freely and thus the law of supply and demand is regulated.

Miscellaneous: Just by mere chance one evening last week I sat down to the radio and carelessly whirled around the dial and as I did so I heard an announcer mention as one of the features a certain man would put 7000 bees on the bald head of a man from the audience. Naturally I at once guessed who the demonstrator would be and later on it was no surprise to hear the voice of "E. R." just before and while the demonstration was taking place. At least once during the act, the announcer asked the "victim" if he had been stung yet—this after he had been crowned with the bees under a hat and with bees forming a living toupee. The "victim" was slow to answer and when his voice did become audible he stated that no stinging had been noticed as yet and that if he did get stung the demonstrator would be sure to be aware of the fact.

Radio has now become quite common-place but when we happen to know the principal person on a program we get more of a "kick" out of that program.

Distant pastures always look greener and as a rule the other fellow generally appears to have the best job. This, no doubt, applies to beekeeping localities and I know I have often wished that our nectar resources, etc., were like some that we read about. I thought of this some time ago when a valued correspondent in far off South Africa wrote me that no honey was allowed to enter that country and no live bees. The reason? No AFB in South Africa and the authorities say that no AFB is going to come in if they can help it.

Naturally as a beekeeper I began to conjure as to the possibilities of big scale operations in that country with no possible competition from outside countries. But sad to relate my dream of a beekeeper's Utopia was rudely shattered a short time ago in the last letter from my friend.

I had sent him some raspberry seeds and in acknowledging receipt of the parcel in a letter dated Nov. 25 he jocularly wishes that I could enclose a couple of good Italian queens and send them to him. He states that the native bees are vicious almost beyond belief and terribly hard to handle, and as an example of what they will do I quote from the letter:

"Last year a mad swarm came along and killed three of my pure bred pigs, 30 of my wife's prize Rhode Island Red hens, a cat and a goat and a pet baboon. The rest of our live stock was only saved by carrying them in the house which fortunately is properly screened".

That this is no exaggeration, may I say that my friend is one of the largest commercial beekeepers in South Africa and a graduate of a well-known Agricultural College.

Well, I guess after taking all matters into consideration I shall decide to stay in Ontario even if we do have to fight AFB and meet competition.—J. F. Byer, Markham, Ont.

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A Confab

By the Editors

(Continued from January)

Abnormal Supersedure of Queens

In the opinion of the editors the problem of early or abnormal supersedure of queens is one of the biggest problems before the beekeeping industry today, especially in connection with the package bee and queen business. If it is a fact, as many beekeepers are affirming, that an abnormally high percentage of queens produced commercially, and shipped either with packages of bees or in mailing and introducing cages, are superseded soon after being put into hives, the cause of this supersedure should be determined and conditions back of it corrected. This problem must be solved, or the business of producing and shipping queens and package bees, which has been, and still is such an asset to our industry, will be hampered.

We have some opinions as to the cause of early supersedure but we will withhold them for the present, until more of our readers have expressed themselves on this vital topic.

Mr. Freeland Comes Back at Mel Pritchard

As expected, when Mel got that old corn cob pipe filled and lighted, then sat down to his Corona, he pecked off a reply to Mr. Freeland's letter on "Cause of Early Supersedure," appearing in the December Confab, which reply brought a speedy retort from Mr. Freeland, which follows:

I would like very much to make the following reply to Mel Pritchard regarding his comments on my article which appeared in your December, 1937 Confab, where-in I gave my reasons for early supersedure of queens.

First, Mr. Pritchard says I admit that some queens reared from the grafted method are large, fine-looking and very prolific. I believe he will agree with me that we could hardly judge a queen's worth by her size and beauty. Neither would her prolificness be of any value if her progeny do not measure up to a high standard.

Second, Mr. Pritchard says he thinks it is generally conceded that when Bacillus larvae gains an entrance to a hive the colony is doomed regardless of how the queen is reared. I will answer this by saying that just as long as the practice of rearing queens by the grafting method is used then adding insult to injury and permitting them to in-breed there will be Bacillus larvae entering the hives. I say, lock the door before the horse is stolen by rearing all queens direct from eggs, making conditions possible for proper matings just as nature intended. Then AFB will give no further trouble. We just can't work against nature without paying a dear price.

Third, I am just wondering about that series of apiaries mentioned by Mr. Pritchard where-in they averaged 140 pounds per colony and all colonies headed by grafted queens. I wish there could have been a few of the colonies headed by queens reared direct from the egg. I think they would have done much better.

Mr. Pritchard also says he has lived to see the business of queen rearing grow from a small beginning to its present status of producing more than 200,000 queens a year, nearly if not all of which are grown from grafted cells, and that the largest honey producers have been buying these queens so they should know their worth. Well, it does seem to me they are beginning to find out their worth considering the large number of complaints they are making regarding early supersedure, AFB, bad wintering, and short honey crops. Yes, I do believe they are finding their worth.

I will close by saying if the grafted method of rearing queens was carried way off over on the back side of the farm and thrown in a briar thicket beekeepers would be much better off.—M. N. Freeland, Buchanan, Tenn.

Wonders Why Mel Doesn't Tell Us

Now comes Fred A. Krause of Rice Lake, Wis., with his 50 years' of beekeeping experience commenting on statements by Mel Pritchard and Frank Labus appearing in January Confab. Then Mr. Krause asks the question that all of us would like to have answered, "Why do bees supersede so many queens with packages?" Perhaps Mr. Krause in a future issue will give us the answer.

Mr. Pritchard has a good report of 140 pounds average for 325 colonies of bees headed with queens from grafted cells, but I would rather see this report taken with

one-half the queens raised from egg-reared queens and the other half from grafted cells. The late G. M. Doolittle always told us to split our yard into two parts to try out any theory.

Mr. Pritchard is like a famous incubator manufacturer who once said, "I hope I can some day make an incubator that will do as good a job as the old hen can."

But what we want to know is, why do bees supersede so many queens in package bees? Mr. Pritchard ought to be able to tell us as he has been rearing queens for 40 years. Maybe he can't tell us and maybe his queens are not being superseded. Bees do not supersede their own queen raised from the egg after losing their queen that came with their package.

I have had 50 years of experience in bees. I have tried most everything. I have bought queens all over the country, also package bees. But it's the same old story every year—so many superseded queens. It seems supersedure is the worst in package bees. When a package loses their queen, you might as well throw them over the fence as they are worthless. I had about the same success with package bees this last spring as Frank Labus reported in your last Confab.

A Word on Top Entrances

I don't agree with Mr. Labus on top entrances. My brother at Ridgeland bored one inch auger holes in one-half of his hives of bees that he put in the cellar a year ago. He put the hole in the top of the hive just below the cover. He said all those top entrance colonies came out dry and clean in the spring while the rest with only bottom entrances came out wet and moldy. He left both entrances open all summer and fall. He said the bees used the top entrances mostly during summer, not a single colony attempted to glue the top entrance shut last fall.—Fred A. Krause, Rice Lake, Wis.

What Mr. Krause says about top and bottom entrances is in agreement with our experiences during the past four years. In some of our apiaries we use a ⅝" winter entrance half way up, or in the middle of each food chamber, or upper brood chamber—this in addition to a small bottom winter entrance ¾"x⅜". Inasmuch as we permit each queen to occupy the double brood chamber throughout the year, we leave this ⅝" hole open during the summer and find that bees use this entrance as well as the regular bottom entrance all during flying weather. They do not attempt to seal it shut.

We like middle top entrances because colonies are not likely to suffocate during an ice storm, because bees can take winter flights more conveniently during suitable flight days, and combs are drier in the spring than they are in hives with only bottom entrances.

Allan Latham Comes to Mel's Rescue

We are glad to have Allen Latham of Norwichtown, Conn., back in the Confab, especially since the discussion has turned to queen rearing.

I must take exception with Mr. Freeland, page 733 of December, 1937 Gleanings, G. M. Doolittle gave the grafting method to beekeepers. For nearly twenty years I bought queens from Doolittle. I never had a poor queen from him. His queens would do as good work the second year as the first.

I have practiced grafting queen-cups for over 30 years. During that time I have seen my stock and my queens improve. I do not hesitate for a moment to state that I can rear queens by the grafting method which will average better than queens that come from swarm cells and far better than supersedure queens.

While attending a meeting of beekeepers in Albany, N. Y., some weeks ago a beekeeper came up to me and told me that one of the queens sent him by me did good work for six years and lived into her seventh year. I felt doubt and questioned him closely. He assured me that the queen was clipped and he was positive that for seven years the hive had the same queen. That does not look as if queens reared by the grafting method are prone to supersedure.

I, too, have had (page 693, 1937,) at times batches of poor queens for reasons hard to know, but when conditions are right queens from grafted cups are right in every way.

It looks to me as if Mr. Freeland was somewhat bigoted here and that he actually does not know the facts. He emphasizes Nature's way. I have known men who would not let their children be vaccinated, because it was unnatural.

Dairymen have improved cattle, swine-breeders have improved swine, poultry men have improved the laying qualities of rens, fruit-growers have improved fruit—and one and all have gone to a certain extent against Nature. It is against Nature to prune an apple-tree, but by so doing we get larger and better apples.

Very poor queens can be, and are, reared by the grafting method. It is the fault of the beekeeper not the fault of the method. —Allen Latham, Norwichtown, Conn.

(To be continued)

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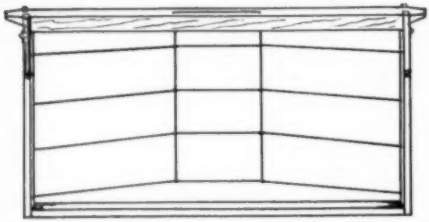
Heads of Grain from Different Fields

Preventing Stretched Cells

The accompanying diagram shows how I wire my frames to avoid sagged combs. Two very small holes are bored into the top of the top bar about four inches apart before the frame is nailed together. After the frame is nailed and wired horizontally a piece of wire the proper length is cut and each end is brought down through the holes in the top bar grasping both ends with a pair of



This method of wiring prevents the cells from sagging.

pliers and pulled tight. Then, raising each horizontal wire a little the vertical wire is wound around the horizontal wire once on each wire and the ends clipped off. I have about 500 combs built on such wiring and have yet to find any sagged combs.—Philip Johll, La Crosse, Wis.

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A Monument to Bees

A lovely monument to bees and beekeeping strikes the eye of any close observer who looks out over great Salt Lake City at night from the foot-hills to the east of the city. The monument is the enormous dome of the Hotel Utah which is built to represent an old-fashioned bee skep and which is lighted all around as in the accompanying photograph. At the part of the dome representing the entrance to the skep there is also an American eagle in neon lights: the skep being the symbol of Utah which is called the "Beehive State," and the eagle that of the whole United States. The Hotel Utah is Salt Lake City's most fashionable hotel and one of the finest buildings of the state. It is located next to the beautiful Tabernacle Square, site for the "Mormon" Temple and the Tabernacle from which the Mormon Tabernacle Choir makes weekly national broadcasts which many of the readers of Gleanings must have heard.—A. E. Fife, Palo Alto, California.

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Two-Queen Colony Without Excluder

In June, 1936, I started to requeen a black hive of bees. Upon opening this hive I found baby Italian bees and as there had been no comb swapping I began wondering. I looked further and found baby blacks also. Then I knew I had something unusual. I looked through this hive and found a black, also a yellow queen. I closed the hive and let them be. These same queens were in the hive at the last examination. They went through two seasons and one winter together with nothing between them. They maintain separate brood nests though they usually about touch. I have seen both queens on the same comb. We have run this hive two and three stories high without an excluder. They have built queen cells several times. We shook out a few packages and the

The beautiful dome on the Hotel Utah which can be seen for miles, when lighted at night.

queens went right on laying. Both are average layers. I don't look for both to be in the hive next spring but they stayed last winter. I wonder if this is very unusual. I never saw anything like it before. I have seen two queens in a colony when there was an excluder separating the queens, but never without it for long.—T. J. Sullivan, Gilbertown, Ala.

[It is not uncommon to find an old queen and her daughter in the same hive for a time. In your case an Italian virgin queen may have entered this hive by mistake after her mating flight. Usually when this occurs one or the other of the queens is disposed of.—Editor.]

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Don't Open Hives Too Often

The following is taken from "The Bee World" November, 1937, page 127: "A. Bogdanoff writing in the October Deutche Bienenzucht on scale hive observations notes that the effects of an inspection of the colony last for three days. The beekeeper loses, it appears, at least one whole day's nectar yield, a fact which few realize. [The author's strictures on textbooks that advise frequent examination of colonies are entirely justified. Beginners should rather be told never to open a hive unless it is unavoidable, and to keep—after Gerstung's plan—a stock to ill use if they must practice handling bees and indulge their natural curiosity]."

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Mice in Bee Cellars

I note your answer to Mr. H. L. Rice in December, 1937, page 758. In our many years of cellar wintering, mice never have damaged combs although it is known that they have been present in the cellar at various times. It seems that so long as temperatures are above 40 degrees the bees are able to protect their combs. I do not believe that the full ⅞ inch entrance should be restricted in any way as it is liable to become clogged, thus shutting off air. If cellar temperatures can not be maintained between 40 and 50 degrees it would be preferable to winter outside.—E. S. Miller, Valparaiso, Ind.

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MASSACHUSETTS MEETING

The winter meeting of the Massachusetts Federation of Beekeepers' Associations was held in Worcester Auditorium, Worcester, Massachusetts, on Thursday, January 6, 1938.

The first speaker was J. R. Hepler, Associate Horticulturist, University of New Hampshire, on "Handling a Small Apiary". It was pointed out that small apiaries were the rule. Six or eight hives seemed to be the maximum number of colonies per apiary and fifty pounds of honey taken from each colony was considered a good crop.

Mr. George Meigs, of the Essex County Agricultural school, spoke on "Pollination". Orchardists have to rely on honeybees for a good set of fruit. The Department of Pomology of the Massachusetts State College supplied tables showing the best varieties of fruits for Massachusetts arranged in order of season and of results obtained in selfing and crossing apple varieties.

The next speaker was Allen Latham, Apiculturist, Norwichtown, Connecticut, who spoke on the subject "Early Manipulation of Bees". Mr. Latham said that there was nothing to do in winter but wait for an early warm day when bees were flying. On that day notice the colonies where the fliers are carrying out dead bees and mark those colonies O. K. Also notice those colonies where some of the fliers are buzzing around the entrance searching for weak colonies. Mark those colonies and examine them at the first opportunity, taking particular pains to look for signs of foulbrood and also the queen. If disease is found burn the colony because robbed colonies are the chief cause of spread of disease.

Mr. E. R. Root, President of The A. I. Root Company, spoke on the topic "Honey, from the Beehive to the Bottle". Mr. Root began his talk with the quotation "What's the use of knowing so much when so much you know ain't so", and explained all about the handling of honey when heating to 160 degrees and straining through two thicknesses of wet cheesecloth, funneling without drip to below level in the tank to avoid air bubbles.

Paul W. Dempsey, Waltham Field Station, Massachusetts State College, told of the experiences of his family in using honey. Dr. Frank Shaw, Massachusetts State College, spoke on "Pollen Requirements and Pollen Substitutes". The effects of flour, dried milk, beef, and other cereals were explained and found to be much below the benefits from freshly gathered pollen.

The Association's members voted to recommend that the state appropriate $8,000 for bee inspection work in eradication of bee diseases.

W. M. Copeland, Sec'y.

Talks to Beginners

M. J. DEYELL

In last month's Talk I mentioned the principles of beekeeping. At the risk of seeming to be tiresome, or of repeating, I must refer again to these fundamental principles, because experienced beekeepers as well as beginners may overlook them.

But first, just an other word about our marvelous industry and how it differs from other branches of agriculture.

No Other Business Like Beekeeping

It has been said that things are what they are by way of comparison. Is there any business connected with agriculture that is similar to beekeeping? Beekeeping falls under animal husbandry. In caring for cattle, horses, hogs, or poultry it is necessary for the owners to be on hand to feed the stock or poultry regularly, especially during the winter months in the North. Furthermore, the feeding of animals has become a science.

What about the care of bees? Instead of having to feed bees regularly and to maintain a balanced ration, bees will feed themselves, provided the owners have sense enough to leave an ample amount of honey with each colony. As a matter of fact a number of the sensible, efficient commercial beekeepers in the North who depend on bees for their bread and butter do leave an adequate supply of honey with their bees in the fall, also give them protection against the elements, then go South to escape the cold northern wintry blasts and to enjoy southern sunshine until spring. That is the life!

Another rather unusual characteristic of bees is that they are not restricted by boundary lines in their search of nectar. They are free lances, so to speak. Stock and poultry must remain within bounds. Bees have been known to fly eight miles for nectar, but as a rule they do not travel more than two or three miles from their home.

And so, in caring for bees we must realize that we are dealing with a very unusual and marvelously interesting insect, practically the only insect aside from the silk worm that man has been able to handle commercially and profitably.

We Can't Tame Bees

Some seem to think, that because we keep bees in hives that we have tamed them. No, they are as wild as they ever were, even when Sampson took the honey from the swarm in the carcass of the ox thousands of years ago. And this is another point of difference between bees and farm animals. Cattle and other farm animals have become domesticated while bees have not been tamed but still respond to certain stimuli as they did thousands of years ago in their natural habitats,—trees and crevices of rocks.

If any beekeeper thinks he has a colony tamed he may live to see that colony send off a swarm that will fly straight for the woods. I had such an experience in northern Michigan. An enormous swarm came out of a hive and instead of clustering on an apple tree the swarm headed straight for a big woods a mile away. I grabbed my bee smoker and a wash tub, jumped into my old Ford and followed the swarm as it flew parallel with the road. At the edge of the big woods I lost sight of that swarm, the biggest one I have ever seen. Those bees were too wild for me. I should have had the queen's wing clipped.

Now, perhaps you will wonder what all this has to do with the fundamental principles of beekeeping mentioned earlier in this talk. Well, just this,—when we begin to understand (notice I say, **begin**) the behavior of bees, the environment in which they live and the things they need for their existence, then and then only can we begin to understand the principles on which successful beekeeping is built.

The Three Beekeeping Principles

There are only three things a colony of bees needs in order to live and these three things constitute the principles we are

talking about and can be easily discovered or seen if we examine carefully one of the natural habitats of a colony of bees—a bee tree. Some of you have cut bee trees and have perhaps seen these things, as I have.

The first thing the bees have is space within the tree for clustering and for building combs. The second is food—honey and pollen stored in the cells of the combs to be used as food for bees and brood. The third is protection against the elements, this protection being furnished by the outer part of the tree. Usually a small knot hole leads to the cavity in which bees are clustered.

These three things so essential to the life of honeybees become the fundamental principles of modern beekeeping and may be stated as follows:

(1) Bees must have ample space for building combs for the storage of their food.

(2) Bees must have an ample supply of food—honey and pollen—which is stored in the cells of the combs.

(3) Bees must have adequate protection against the elements.

Application of Principles

As we go along through this coming season I shall try to point out just how these principles should be applied to present day beekeeping. Each principle has a bearing on some phase of apiary management.

Beginning with the first principle—space for comb building—this simply means furnishing a hive, or a modern home for a colony of bees to live in. As we get along further into the season, you will realize that comb space during a honey flow means putting on a sufficient number of supers to furnish room in which the bees can store surplus honey, for it is surplus honey that beekeepers are, or should be interested in. If we fail to put supers on in time, bees are likely to swarm. More will be said later regarding this.

Our forefathers kept bees in straw skeps, log gums, and crude box hives. In those days comparatively little was known about the activities of the bees within the hive, because the bees built their combs crisscross and it was impossible to open the hives or to remove the combs to examine them.

The invention of the movable-frame hive by L. L. Langstroth in 1852, just 85 years ago, marked the beginning of a new era in beekeeping. A few years later the art of making comb foundation was discovered.

Good Hives and Equipment Essential

Most beekeepers appreciate the value of hives that are made accurately. There should be correct bee spacing between and around each frame to avoid killing bees when manipulating the frames, also to avoid the building of burr comb (small pieces of comb between the frames) which will occur if the spaces are too large. If the spaces are too small the bees will close them with propolis, (a gummy substance obtained from trees). The minimum bee space should be $\frac{5}{16}$" and the maximum $\frac{5}{13}$". A ¼" space is about right. A bee supply catalog contains detailed information on all bee equipment.

We will refer to the two remaining beekeeping principles again in future talks. Just a word at this time to those who are planning to get bees, also those who have bees.

Getting Started

Some of our largest commercial beekeepers made a start by capturing a stray swarm of bees. If such a swarm is hived early in the season some surplus honey may be secured that same year. Others have taken swarms from bee trees. Such work is interesting but difficult, yet there is a certain fascination about cutting bee trees that we cannot get away from.

Some buy hives of bees locally. This is all right provided the colonies occupy standard hives that contain frames with good wired combs drawn from full sheets of worker comb foundation. Such colonies should be inspected by an authorized state foulbrood inspector to make sure that they are free from diseases. **This is very important.**

Package Method Most Profitable

The reason the package bee method of starting colonies is preferable is because packages can be purchased reasonably early in the season, in time to develop them into normal sized colonies to take advantage of the main honey flow. This means that it is possible to secure a crop of honey the same season also to get quick returns from your investment.

In next month's talk I shall have more to say on the management of packages.

Beginners Having Bees

If your hives are covered with snow don't worry about the bees, so long as the entrances are not clogged with ice or dead bees. If you notice a few dead bees near the entrance don't get alarmed. That is a healthy sign.

In some parts of the far South bees may be carrying nectar and pollen.

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Asked and Answered

Feeding During Cold Weather

Question.—Some of my colonies in the bee cellar are short of honey. Can I feed them sugar syrup while they are in the cellar?—J. W. Singer, Wisconsin.

Answer.—Yes, by all means, feed sugar syrup made of two parts of granulated sugar to one part of water, either by weight or measure. Feed the syrup while warm in five or ten pound friction-top pails, with covers of pails punctured with about 20 small holes made with a 3-penny nail. A pail of warm syrup should be inverted over the top bars of the frames, or the hole in the inner cover. An empty super is placed under the outer cover to make room for the feeder pail, and if the feeder is placed directly over the frames it is an advantage to cover the pail of warm syrup with burlap sacks or some such material to retain the heat of the bees. During very cold weather it is impossible to feed syrup successfully out-of-doors but it can be fed in a cellar where temperature ranges between 40 and 50 degrees Fahrenheit. Generally speaking, such emergency feeding is not very satisfactory but occasionally it must be resorted to when bees are not fed sufficiently in the fall during September or October.

Use of Excluders and Caging Queens

Question.—(1) Does not the use of queen-excluders (in extracted honey hives) in any way retard or impede the work of the bees during the honey flow? It seems bees coming in loaded with honey have difficulty in wending their way through the queen excluders in order to get up into the upper boxes. Do not bees work faster during the honey flow when the hive is free of queen excluders? (2) In order to procure a bigger crop of honey, some beekeepers advise caging the queens just before the honey flow sets in. In that way, there is less brood to look after and thus the bees have more time to gather honey. Does not this periodical confinement in any way harm the fertility of the queen? Some say that after this delay the queen is apt to become less fertile and, chances are, she may become worthless. Have you any definite information on this matter?—Bros. A. Miciunas, Illinois.

Answer.—(1) Excluders do appear to impede the progress of bees to some extent as they enter the supers. However, excluders that are properly made and properly used are, in the end, economical because one knows definitely where the queen is to be found, and this is worth something in honey production. Some extracted honey producers have been tempted to go without queen excluders for a few years and later these same producers have found themselves again using them. (2) The caging of queens for a time prior to or during a honey flow has been practiced by some beekeepers. It seems that the confinement of the queen does not in any way interfere with her fertility. Some years ago we confined some queens in hives for a period of two months and at the end of that time we introduced these queens to colonies, making a comparison of these queens with younger ones that had been picked up from mating boxes. So far as we could see there was no difference in the two lots of queens. In the production of comb honey, where swarm control is quite difficult, some producers practice caging the queens for ten days at the time queen cells are found. At the end of the ten-day period these queens are either released or they are removed and young queens introduced. It seems that a ten-day queenless period is essential in swarm control during the height of the season. In regions where there is a long drawn-out honey flow, such as occurs in alfalfa and sweet clover regions, this confinement of the queen for ten days will interfere with the work of the bees in the supers later on, because the working force of the colonies is reduced and this in turn lessens the amount of surplus honey secured. And so, the advisability of caging queens for ten days depends largely on conditions that obtain in the region in which it is practiced.

Utilizing Combs of Soured Honey

Question.—I gave a colony of bees a super of half-filled full-depth frames of honey (some of which was unripe and unsealed) in a food chamber for extra winter supplies. At that time their queen was all right and laying. That was in August or September. These bees evidently

did not need the honey given so did not use the unripe unsealed honey, but let the unsealed portions sour. What is the proper way to dispose of, or handle, these frames containing from one-fourth to one-fifth sour unripened honey? The sealed, or greater portion, is all right and should be saved. Can I give frames containing sour portions to strong colonies for cleaning?—H. B. Dale, Florida.

Answer.—You should give this honey to strong colonies of bees after settled warm weather comes. The strong colonies will readily utilize this honey for food, or if it is not needed for bee food, the bees will work it over during the season and make it suitable for table use when it is eventually removed as surplus honey.

Bees Flyig Out on Snow

Question.—I have two hives placed together in a southerly exposure that are packed together, one sheet of tar paper going around both hives well packed with leaves. I used both hives for comb honey and they are wintering in a single-hive body each. The honey flow was long and slow so both hive bodies were packed with honey in the fall. My best hive made some surplus. Both of these hive bodies were so full of honey when I packed them that each hive was all any one would care to lift alone. The bees in my best hive are behaving in a very peculiar manner. Every now and then a bee will fly out of this hive and die in the snow. Yesterday I counted about 25 that had died. I feel quite sure from watching them that they all come from one hive. I do not think it can be lack of food or cold. They are well protected and had the best of the honey in their own hive body. I would like your opinion on the matter.—Warren L. Pond, Massachusetts.

Answer.—It seems probable that your two colonies in single-story hives, with an abundance of honey, should winter successfully. The dead bees that you find at the entrance of one of the hives are perhaps old bees that have outlived their usefulness in the hive. You need not worry concerning this colony in-as-much as it is populous in bees. A few old bees lost will not reduce the strength of the colony to any great extent. The young bees in the colony are what count for good wintering.

Pollination of Citrus Fruits

Question.—This is a citrus growing district. A few of the growers seem to think that the bees in pollinating the Lisbon lemon and poorman orange make the lemon a bad shape. They (the growers) are going to try to do away with the bees, which will be no good to me. The Department of Agriculture of New Zealand can not give me any information on this subject.—E. A. Gauthern, Bay of Islands, New Zealand.

Answer.—We believe we can say without fear of contradiction, except by those who are uninformed, that bees do perform a very valuable service in the pollination of citrus trees, taking in grapefruit, orange and lemon. The lemon trees especially need the work of the bees. The lemon growers all over California are glad to have the beekeepers place their colonies in their orchards. The same is true in Florida. Throughout the last-named state the bees are in big demand in all of the orange groves, both North and South. If your lemon growers insist that they do not want bees in their groves they are simply blind to their own interests. They should get in touch immediately with the extensive lemon growers of California and of Florida. We talked with one lemon grower of California who had something like a hundred acres of lemons. He made this statement—that he simply could not grow lemons in quantity and quality without plenty of bees scattered throughout the grove and in reach of the trees. Lemons mature in the cooler weather but bees will fly nevertheless and get in their work by visiting the blossoms. We have personally tested out some of the lemon honey. It is very fine and it is too bad that it cannot be secured by the carload. You possibly know that the number of lemon trees where citrus fruits are grown is a very small percentage to the number devoted to oranges and grapefruit. The statement that the bees will cause the lemons to be poorly formed or badly shaped is really a joke. No such claim has ever been made in America. The fact is that the ordinary deciduous fruit like apples will be ill-formed unless there are plenty of bees to pollinate the blossoms. These apples with large dents on one side when cut up show that some of the seed pods are not filled out. This is the direct result of imperfect pollination. The same principle ought to hold too with regard to citrus fruits.

Super-Lifting Machine

Question.—Has there ever been tried out or advocated a machine for lifting the honey supers off the hive? When these began to pile up above the brood chambers this work becomes very hard, to say

(Continued on page 118)

XUM

Buy and Sell Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate—7 cents per counted word each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in the 15th of month preceding.

HONEY FOR SALE

The reliability of honey sellers is not guaranteed, although strict references are required.

FOR SALE—Clover extracted in sixties. C. Holm, Genoa, Ill.

CHOICE buckwheat honey in 60's. Lee J. Gable, Romulus, N. Y.

FANCY clover honey, case or quantity. J. Stahlman, Grover Hill, Ohio.

7 CASES light amber in used 60's, 6½c. Earl Walldorff, Dunkirk, N. Y.

FOR SALE—Extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

HONEY—Light and light amber extracted. F. W. Lesser, Fayetteville, N. Y.

MICHIGAN white clover honey. New sixties. Orval Dilley, Grand Ledge, Mich.

CHOICE MICHIGAN clover honey in new 60's. David Running, Filion, Mich.

FOR SALE—Extracted sweet clover honey. Russell D. Smalley, Rippey, Iowa.

MICHIGAN clover extracted honey in sixties. M. H. Hunt & Son, Lansing, Mich.

CLOVER and light amber extracted, new sixties, Don Barrett, Howell, Michigan.

FOR SALE—Fine buckwheat honey in kegs. Julius Seewaldt, Gainesville, New York.

CHOICE CLOVER and light amber honey in 60's. The Hubbard Apiaries, Onsted, Mich.

HARRIS—Michigan clover extracted in new sixties. J. N. Harris, Saint Louis, Michigan.

MICHIGAN'S finest well-ripened white honey in new 60's. Jay Cowing, Jenison, Mich.

CHOICE MICHIGAN clover honey in new 60's. Arthur Thayer & Sons, Freeland, Mich.

WELL RIPENED clover extracted in sixties, 8c, amber 7½c. H. G. Quirin, Bellevue, Ohio.

PALMETTO, mangrove and amber honey in new sixties. Peter W. Sowinski, Fort Pierce, Florida.

AMBER HONEY—Good quality, not less than 50% clover. Harry Spooner, Stephens, Arkansas.

FOR SALE—5 tons amber and light amber honey, 6½ to 7c here. Will A. Horst, Crown Point, Ind.

BUCKWHEAT famous Helderberg Mountain quality, in 60's. H. Greulick and Son, Scotia, N. Y.

FOR SALE—Light amber chunk comb honey in pails and shallow frames. Hyde Bros., New Canton, Illinois.

NEW YORK State comb and extracted honey, buckwheat and clover, any quantity, all size packages. Five-pound pails my specialty. Edward T. Cary, Midland Ave. and Tallman St., Syracuse, N. Y.

WHITE CLOVER COMB 12 to 16 oz., mostly 15 oz., 24 sections, $3.75. Clarence Engle, Kearneysville, W. Va.

FOR SALE—Blended clover extracted honey, fine flavor, 8c, in case lots. N. B. Querin, R. No. 4, Bellevue, Ohio.

FANCY white tupelo honey, will not granulate, 9c in sixties, 8c in barrels. Stevenson's Apiaries, Apalachicola, Fla.

HONEY in 60, 5, 2½ lb. cans; 4, 8, 16, 32 oz. jars and comb honey. Inquire J. Scarff, 210 Lincoln Ave., Syracuse, N. Y.

16,000 lbs. northern Michigan honey, packed 120 lbs. in case. Sample 15 cents. George Jaquays, East Jordan, Michigan.

HONEY FOR SALE—All kinds, any quantity. H. & S. Honey & Wax Co., Inc., 265-267 Greenwich St., New York, N. Y.

FOR SALE—CHOICE clover and amber extracted honey. Prices upon request. Jonkman & Oosting, Evergreen Park, Ill.

MICHIGAN'S finest clover honey, new sixties, no disease, 8c. Amber 7c. Sample 10c. John McColl, Tecumseh, Michigan.

SELECT LOTS—Extracted honey. Prices right. Write us about your needs. A. I. Root Co., 224 West Huron St., Chicago, Ill.

HOWDY'S HONEY—Small lot of white, clover and amber, mixed extracted in sixties still on hand. Howard Potter, Ithaca, Mich.

FINEST quality clover honey. Shallow frame comb or extracted. Ton lots or carloads. Sioux Honey Association, Sioux City, Iowa.

WHITE extracted in sixties. Well ripened. Case or ton lots. Satisfaction guaranteed. Sample twenty cents. Harry C. Kirk, Armstrong, Iowa.

BUCKWHEAT honey in kegs and cans. Fall honey in 60's. All strained perfectly clear and highest quality. Earl Rulison, Route 1, Amsterdam, N. Y.

SOLD OUT of Michigan clover honey, thanks! Our 1938 crop should be ready for the market next July. E. D. Townsend & Sons, Northstar, Michigan.

COMB HONEY—Fancy amber, No. 1, $3.25; fancy buckwheat, $3.. No. 1, $2.75; light amber clover, 8c; buckwheat, 6½c. C. B. Howard, Geneva, N. Y.

CLOVER HONEY FROM CLOVERDALE, Ohio's finest clover extracted in 60's. Sample, 10c. Prices upon request. The Cloverdale Apiaries, Cloverdale, Ohio.

HONEY PACKERS—Write us for prices on carload lots of California and western honeys. We stock all varieties. Hamilton & Company, 108 West Sixth St., Los Angeles, Calif.

QUALITY packs of pure maple products, buckwheat and clover honey in latest styled packages, all sizes. Prices are right. May we have a trial order from you. Northern Maple Syrup Co., Liverpool, N. Y.

FANCY white clover comb, attractive package, $3.25 per case of 4 dozen. Sample, 15c. Extracted light amber crystallized, in 60's. 6½c. H. Blitz, P. O., Box 3452, Phila., Pa.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTE—We will not guarantee any honey buyers' financial responsibility and advise all beekeepers to sell for cash only, or on C. O. D. terms except when the buyer has thoroughly established his credit with the seller.

WANTED—White clover and amber extracted honey. Mail samples and price. Jonkman & Oosting, Evergreen Park, Ills.

WANTED—White clover and light amber extracted honey, white comb, carlots or less. Roscoe F. Wixson, Dundee, New York.

WANTED—Comb, chunk comb, white and light amber extracted honeys. Any amount. Central Ohio Apiaries, Millersport, Ohio.

CASH PAID for all grades of honey. Bee supplies and honey containers for sale. A. Tennenhouse, 12213 12th St., Detroit, Mich.

WANTED—Carlots of honey, state quantity, shipping point and price. Mail sample. Bryant & Cookinham, Inc., Los Angeles, Calif.

WANTED—White and Amber Extracted Honey, any quantity, also Beeswax. Write The Fred W. Muth Co., Pearl & Walnut Sts. Cincinnati, Ohio.

FOR SALE

BACK NUMBERS of the bee journals. Willie Groom, Gashland, Mo.

READY WIRED FRAMES beat anything you ever saw. Literature free. Sample 10c. A. E. Wolkow, Hartford, Wis.

COMPLETE queen painting outfit, $2.00 postpaid. Southwick Apiaries, 176 Waban Avenue, Waban, Massachusetts.

FOR SALE OR TRADE for package bees: Queen mailing cages. Best quality. Beeline Apiaries, R. 1, Menomonie, Wis.

30-FRAME Woodman radial extractor with capping baskets in No. 1 condition. Used two seasons. Carl F. Krueger, Watertown, Wis. R-2.

YOUR WAX worked into high quality medium brood foundation, 15c pound; 100 pounds, $11.00; thin super, 22c. Fred Peterson, Alden, Iowa.

FOR SALE—Complete honey processing equipment. Send us your inquiries. Consolidated Products Co. Inc., 15-21 Park Row, New York, N. Y

QUALITY bee supplies at money-saving prices. Prompt shipment. We take honey and beeswax in trade. The Hubbard Apiaries, Onsted, Michigan.

FOUR-FRAME Root reversible hand extractor in good condition. Also Root uncapping Machine, very little used, good as new. Ray C. Wilcox, Odessa, N. Y.

ATTRACTIVE prices on bee supplies and comb-foundation. Send for catalog. Saves you money. The Fred W. Muth Co., Pearl & Walnut Sts., Cincinnati, Ohio.

FOR SALE—500 or more, 2 and 3-lb. shipping cages for package bees. New, light, clean basswood, screened ready for bees. Feeder cans if wanted. H. C. Short, Fitzpatrick, Ala.

HOUSE, two acres, 150 colonies, guaranteed free from disease, equipment for 300, or will trade for similar outfit in southern Colorado, western New Mexico, Arizona, or Texas. Alfred Johnson, Rankin, Illinois.

FOR SALE—Comb foundation at money-saving prices. Plain, wired and thin section. Wax worked at lowest rates. Comb and cappings rendered. E. S. Robinson, Mayville, N. Y.

FOR SALE—Barnes bench saw in A-1 condition with 36x37 inch table, jig-saw, dado, and self feed attachments. A machine built for hard use. Price $28. W. C. Long, Millville, Pa.

FOR SALE—Fine quality queen mailing cages; Root quality bee supplies; both comb and extracted honey. Orders filled promptly. Write us or drive over M53, fifty miles north of Detroit, Hamilton Bee Supply Co., Almont, Michigan.

$11.00 is our price for working 100 pounds of your wax into medium brood. Our large modern bee hive factory is manned by experienced workers, milling thousands of pounds of comb foundation and hundreds of thousands of board feet of lumber into bee hives annually. QUALITY AT LOW COST is our motto. Free catalog. Free shipping tags for your wax. The Walter T. Kelley Co., Paducah, Kentucky.

BEES AND QUEENS FOR SALE

ITALIAN QUEENS, W. G. Lauver, Middletown, Pa.

PACKAGE BEES that will please you. Sternenberg Bros., Lockhart, Texas.

SILVER RUN QUEENS are sterling. Try them. Silver Run Apiaries, Rt. 1, Phenix City, Alabama.

MILLER BROTHERS—Three Rivers, Texas. Only exclusive Caucasian queen breeders west of the Mississippi.

HEADQUARTERS for Hollopeter's well-bred three-banded Italian queens. White Pine Bee Farms, Rockton, Pa.

BEES FOR SALE—200 colonies, also packages and nuclei. Satisfaction guaranteed. Elevation Apiaries, Milano, Texas.

FOR NO. 1 package bees and queens try our three-banded Italians. Carolina Apiaries, A. E. Cardner, Burlington, N. C., Rt. 5.

QUEENS MAILED ANYWHERE, any time, pure three band Italians, at market price. Write for circular. D. W. Howell, Shellman, Georgia.

GENUINE three-banded Italian bees and queens of fine quality, for 1938. Alamance Bee Company, Geo. Elmo Curtis, Mgr., Graham, N. C.

MY carefully prepared packages of pure three-banded Italians will make money for you. Inquire now. Hugh Graham, College Station, Texas.

NOW booking orders for as good Italian bees and queens as can be produced at market price. Satisfaction guaranteed. Anderson Bee Co., Opp, Ala.

HESSMER BEE FARM—Will quote prices on request for package bees and nuclei, with or without queens. Hessmer Bee Farm, Willie Roy, Prop., Hessmer, La.

MOUNTAIN GRAY BEES—Write for our catalog. In it will be found our prices and description of our genuine Caucasian honeybees. Bolling Bee Co., Bolling, Ala.

BEES FOR SALE—300 colonies Italians in practically brand new equipment. No disease has ever been found here. Central New York. Chas. L. Andersen, Weedsport, N. Y.

CAUCASIAN BEES AND QUEENS for April and May delivery. 2-lb. package, $2.45; 3-lb. package, $3.15; queens, 75 cents each. 15% discount to dealers. Safe arrival, satisfaction. Lewis & Tillery Bee Co., R. 4, Greenville, Ala.

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Packages With Queens 2 lbs.... $2.45
Packages With Queens 3 lbs.... 3.15
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Queens ..... .75
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15 Percent Discount Allowed to Dealers

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Post Office: Shasta, Shasta Co., CALIFORNIA.

PACKAGE BEES

supplied with young Italian Queens that are without equal in quality, vitality and egg production
2-lb. pkg. bees and queen.... $2.45
3-lb. pkg. bees and queen.... 3.15
Queens ..... .75
Discount to dealers
Place order early stating favorite shipping date. No deposit required.

Citronelle Bee Company
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Caucasian Apiaries
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Importers and breeders of highest quality Caucasian bees and queens.
Write for free circular.

Schmidt's Economy Foundation
has now proven it's
SUPERIOR QUALITY
to hundreds of satisfied users.
SHIP US YOUR WAX for cash or to have it worked into foundation. Write for price list to:
Oscar H. Schmidt, Rt. 4, Bay City, Mich.

20 HIVES of bees, guaranteed free from disease or certificate of inspection will be furnished at time of sale. Frank Dvorak, 4535 Broadview Road, Cleveland, O.

BUY THEM on combs with the queen laying as she comes to you. Save risk and time introducing, which are bees and honey in your hive. Marketing agreement prices and booking orders now. J. P. Corona, Kenner, La. Box, 124.

ITALIAN QUEENS, carefully reared, high producing, European foulbrood resistant. New Jersey Experiment Station stock, 75c. Spicer stock one dollar. Circular. E. G. Carr, Pennington, N. J.

THE NORMA ROY APIARIES—Italian bees, 2 pounds bees with queen, 1 comb, brood and honey, $2.45; 3 lbs. bees with queen, 1 comb, $3.15. Queen introduced, if desired. Norma E. Roy, Hessmer, La.

17 COLONIES Italian bees, supers, 2 frame extractor, complete uncapping outfit, good condition, reasonable. Certificate of inspection will be furnished at time of sale. E. W. Nowack, Downers Grove, Ill.

EPHARDT'S HONEY FARMS—High quality Italian queens introduced. Young laying queen, 2 pounds of bees, one standard comb of honey and brood, $2.45 each; also combless packages. Ephardt's Honey Farms, Luling, La.

THREE-BAND Italian bees and queens. Guaranteed to be the best that can be produced. Ready to ship March 10. I can handle your early orders. Queens are reared in orange honey flow with colonies boiling over with young bees. Marketing agreement prices. D. P. Green, Deland, Fla. Route, 2.

LET ME quote you prices on your need of package bees. The light three-banded thrifty Italian kind rank with the best, priced with the lowest. We raise our own queens and thereby guarantee satisfaction and live delivery on comb or combless. T. A. Plauche, Hamburg, La.

CAUCASIAN BEES AND QUEENS, extra gentle, prolific, hardy and winter in the North like their own country. Long-tongued dependable workers. Prices: 2-pound package bees with queen, $2.45; 3-pound package bees with queen, $3.15. 15% discount to dealers. P. B. Skinner Bee Co., Greenville, Ala.

PACKAGE BEES AND QUEENS—Genuinely good in every detail. Ask anyone who has used them. Large, gentle, vigorous three-banded Italians. Outstanding records for honey production. 2-lb. packages with queens $2.45 each; 3-lb. packages $3.15 each. Select young laying queens 75c each. Write for price list. H. C. Short, Fitzpatrick, Ala.

PACKAGE BEES AND QUEENS—For the past five years I have been producing bees and queens in this sub-tropical climate under natural conditions from my northern stock. Let me explain why these packages are producing upward to four hundred pounds honey in my Dakota apiaries and very little superseding. R. D. Jenkins, San Benito, Texas.

ITALIAN QUEENS and PACKAGES

Our high producing queens are honey reared, and mated in strong nuclei. Drones are excluded from our full weight packages.
Young, healthy bees—Light cages—Economical prices.
Prompt service and satisfaction guaranteed.
STRACENER APIARIES **Prairieville, La.**

LEATHER-COLORED Italian bees and queens. Marketing agreement prices. 15% dealers discount. Try us with an order. M. I. Tindal Bee Co., Greenville, Alabama.

SUPREME QUEENS—3-banded Italians. If you have been having trouble with queens, order Supreme Queens, and put an end to your troubles. Can take orders for limited number only as I do not go in for mass production. Twenty years at queen rearing. Order early—75c each. Discount on twelve or more. A. W. Nations, Donna, Texas.

HELP WANTED

WANTED—One experienced man, one helper. Write fully. Edw. Klein, Gurnee, Ill.

WANTED—Man with experience. Give reference and particulars. J. Earl Schreiber, Gooding, Idaho.

WANTED—A good young man with queen yard experience. Write me fully in first letter. H. C. Short, Fitzpatrick, Ala.

WANTED—Young man experienced in beekeeping, to start at once for season. Please state particulars in letter. Frederick D. Lamkin, Union Springs, N. Y.

WANTED—Industrious young man, with clean habits, for 1938 season. State experience, age, weight, height, wages expected. C. H. Schader, Sunnyside, Wash.

WANTED—Industrious young man with clean habits for the 1938 season. State experience, age, wages expected with board and room. B. B. Coggshall, Groton, N. Y.

WANTED—Industrious young man of good health and habits to work with bees. State age, weight, height, experience and wages expected. Board and room provided. A. L. Coggshall, Ithaca, N. Y.

WANTED—Industrious young man with good character and habits for farm work and assist with bees. Good wages, board and room. Reference required. George Wendling, North Branch, Mich.

STRONG reliable young man of good habits to work as helper with bees in out-apiaries, extracting, etc., during active season. Man of some experience preferred. Ray C. Wilcox, Odessa, N. Y.

WANTED—Reliable young man of good health and habits to assist in our apiaries. Give age, weight, height, experience, and wages expected. Room, board furnished. Elton Lane, Trumansburg, N. Y.

WANTED—Experienced young man, reliable, industrious, good health, habits, as assistant with 700 colonies bees. State qualifications, wages expected; board, room provided. Roger C. Lane, Trumansburg, N. Y.

WANTED—Reliable young man to help in extracted honey production. Season April-October. Must be sober, healthy and industrious. Give references, experience, habits, size, age, and wage expected with room and board. Lavern Depew, Auburn, N. Y.

WANTED—Experienced beekeeper for season, also one helper. Must be dependable and willing worker with clean habits. State age, weight, height and wages expected with room, board and laundry. Give full particulars in first letter. Leland Farnsworth, Davison, Mich.

MISCELLANEOUS

FILMS DEVELOPED—Two beautiful velox, glossy, double weight, professional enlargements and 8 prints all for 25 cents coin. Reprints 3 cents. Dependable quality and service. Allied Photo Service Company Drawer 289, Sparta, Wisconsin.

Pettit's Package Bees

The best proof of their popularity is the fact that never in twelve seasons have all orders been filled. Some had to be returned or filled by other shippers.

It seems likely that 1938 will continue the record.

Good queens, young bees, neat packages, prompt service, four sizes of packages to suit both fruit and honey men, guaranteed satisfaction, reasonable prices, courtesy and consideration. These are some of the factors that have made and held friends.

They will satisfy you.
No change in prices and terms.

MORLEY PETTIT
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Seasonable Suggestions

—Ask for 1938 Root catalog.

—Quantity prices on Root's goods on application.

—We have glass and tin honey containers for prompt shipment.

—Beswax wanted for cash or trade.

—Beginner's Outfits to suit your needs.

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LANSING, MICH.

Stevenson's Goldens

Line bred GOLDEN ITALIANS that have proven their worth through the many years, in all parts of the U. S. A. and Canada. Customers report—"They produce more honey—winter well—easy to handle—best colonies in the yard".
Queens are large, uniform, and very prolific. Bees are large, the best of honey producers, and very gentle. Just what YOU need.
No advance in prices, though material used has increased considerably; e.g. Screen up 25%. Write to

STEVENSON'S APIARIES, Westwego, La.

for descriptive price-list.

Better Quality

Bees, Queens, and Service

For the SAME PRICE

J. F. McVAY

Jackson, Alabama

Package Bees

Queens. 3-banded Italians

Full weight packages young bees. Located on main line Illinois Central.

Fast service to all points north, which insures prompt delivery.

17 years' experience rearing Queens commercially.

All queens rigidly culled. They must be good.

Prices
To June 1st

2-lb. pkg. with queen	$2.45
3-lb. " " "	3.15
Mated queens, each	.75

15% discount to dealers

The Ideal Apiaries
Durant, Miss.

WANTED—To trade, 1938 white clover extracted honey for package bees. Leonard S. Griggs, 711 Avon St., Flint, Mich.

SAVE MONEY with a Rietsche Foundation Press; wax worked into foundation, medium brood, 15c lb.; 100 lbs. $11; thin super, 22c. Made on new roller mills, John Stegedirk, Hubbard, Iowa.

SWEET CIDER AND HONEY make an ideal combination for roadside stands. Presses, graters, pumps, filters, supplies. Booklet B, "How to Keep Cider Sweet and Make Vinegar Quickly" free. Palmer Bros., Cos Cob, Conn.

THE BEE WORLD—The leading bee journal in Great Britain, and the only international bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy, post free, 12 cents stamps. Membership of the Club, including subscription to the paper, 10/6. The Apis Club, L. Illingworth, The Way's End, Foxton, Royston, Herts, England.

POULTRY

MAKE MONEY with poultry. Read America's biggest poultry magazine. $1000 cash prizes to chick raisers. Learn how leading poultry raisers succeed. Only poultry magazine operating its own experimental farm. Three years $1.00; 9 months' trial, 25c. Poultry Tribune, Dept. C-52, Mount Morris, Ill.

FARM SEEDS

Red Clover, $15.60 bushel, 99½% pure, free noxious weeds. Strictly wholesale price. Best Idaho Clover, $23.40 bushel. Timothy, new crop, $1.60. Hardy Alfalfa, $14.70. Grimm Sealed Bag, $16.80. Scarified Sweet Clover, $5.40. Alsike, $18.60. Korean Lespedeza, $2.00. All re-cleaned, graded, tested. Guaranteed satisfactory. Write Free Samples. Frank Sinn, Box 482, Clarinda, Iowa.

POSITION WANTED

Experienced young beeman wishes employment with commercial beekeeper, or bees to work on shares. M. Woodward, Bad Axe, Mich. R. F. D.

Two beemen want work,coming season. John Lichter, 914 Virginia, Seattle, Wash.

TOO LATE TO CLASSIFY

3060 lbs. choice light amber. New sixties. Shirl Baker, Rodney, Mich.

Plow—Harrow—Disc—Seed—Cultivate—Spray—Mow. Sizes up to 4HP. BOLENS Power Hoe at $88.50, for Gardening, Cultivating and Lawn Mowing. Easy operation. Many patented features. It's fun to run a Bolens. Gilson-BOLENS Mfg. Co., 289 Park St. Port Washington, Wis.

For quality and honest, efficient service on package bees and queens, Italians or Caucasians, book your order with

Weaver Apiaries, Navasota, Texas

SPINSTER JANE SAYS—

(Continued from page 91)

I am myself, but far be it from me to trust one of the other sex either.

Keeping Up With the Times

I forgot to mention reading up on politics, this winter, so we may be able to vote intelligently, to keep up with the news—no one likes the ignorant folk—read a bit of good poetry, (the men won't be sissies) and don't forget the Great Book, either.

Now I must close as company has arrived for dinner, and Jane's presence is demanded, but just think of this beautiful bit from Oliver Wendall Holmes, on the nautilus,—

"Build thee more stately mansions,
O my Soul,
As the swift seasons roll.
Leave thy low-vaulted past.
Let each new dwelling, loftier than
the last,
Shut thee from Heaven with a dome
more vast,
'Till thou at last art free,
Leaving thy empty shell by Life's unresting sea."

That's a gem of beauty to remember and think about.—Spinster Jane.

Package Bees Queens

Check these features carefully:

YOUNG vigorous bees
SELECT queens only
GENTLE productive stock
FULL WEIGHT packages
LIGHT-WEIGHT strong shipping cages
SHIPMENTS on date specified.

Guarantee:

If for any reason whatever shipment is not made on the date designated, we will refund 1% of the purchase price, per day, shipment is delayed.

No increase in prices

2-lb. pkg. with queen.....$2.45
3-lb. pkg. with queen..... 3.15

Imported and Domestic stock.

Rossman & Long

P.O. Box 133 Moultrie, Georgia

Look Here!

For Special Bargains

14 Jumbo Metal Covered Hives K.D. @ $3.50.

800 Plain Section Holders, old style, 1½" sections $2.50 per 100.

74 8-Fr. Plain Section Supers, 1½" sections @ .90c each. No sections.

12500 Plain Separators, 1/16x3⅝x18⅛ @ $1.00 per 100.

44 13-Fr. 7 wire Excluders @ .70c.

26 13-Fr. Metal Covers with Inner Covers @ $1.25.

2 No. 4117 2-Fr. Extractor @ $22.50.

590 8-Fr. Inner Covers @ .20c each. (in 10s and 20s)

8 Buckeye Hive Stands, nailed and painted, old style @ .45c.

10 Hive Seats and Tool Box, nailed and painted @ $1.50.

19000 Individual Sections, 2x2½x1⅜" @ .60c per 100, $5.00 per 1000.

7000 Individual Sections, 2⅛x2⅛x1½" @ .60c per 100, $5.00 per 1000.

BOOKS

24 Observation on Bees, Huber @ $2.40, with Gleanings, 1 year $3.15.

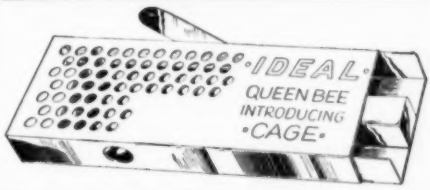
159 Managements of Out Apiaries by Doolittle .25c, with Gleanings, 1 year $1.00.

Advertising Cuts, 2 col. wide @ .15c each.

SEND ORDER TO

The A. I. Root Company

Medina, Ohio



We have a stock of these wonderful all metal queen introducing cages. Complete directions with each cage.

Price 25 cents each
$2.25 per dozen
The A. I. Root Co., Medina, Ohio

Bees and Queens
Three-band Italians
Good Queens

Full weight young bees.
Safe arrival and satisfaction guaranteed.
Prices in line. Write for circular
Book your order early.

W. O. GIBBS
Brookfield, Ga.

ASKED AND ANSWERED

(Continued from page 111)

nothing about the disturbance to the bees when the supers are broken apart.—F. W. Bennett, British Columbia.

Answer.—Yes, quite a number of ingenious devices have been made for handling supers. Some of them appear to have merit while others are too heavy and cumbersome to be practical. If it were possible to have all apiary sites perfectly level and the hives arranged in straight rows and properly spaced a good super-lifter might work. Generally speaking, the use of such a machine is hardly justified in commercial bee-keeping.

HONEY BOWL BEES AND QUEENS

The best-banded Italians

2-lb. pkg. with selected queen	$2.50
3-lb. pkg. with selected queen	3.25
1-comb brood, 2 lbs. bees, queen	3.00
2-comb brood, 2 lbs. bees, queen	3.90
1-comb brood, 3 lbs. bees, queen	3.75
Selected queens, each	.75

For comb packages without brood deduct 50c per comb. No discounts. No last-minute price cuts.

Honey Bowl Apiaries, Reserve, La.

Stoller's Thrifty Packages and Nuclei

Deliveries up to May 1.
Can furnish 4-frame nuclei, select combs, over-running with bees, in fact, young colonies prolific queens. Delivered by truck.

Write the
Stoller Apiaries, Latty, O.
and Sylvester, Ga.

Italian Bees and Queens

Especially selected for **Honey-getting, Thriftiness** and **Gentleness.**

2-lb. pkg. with young laying queen	$2.45
3-lb. pkg. with young laying queen	3.15
Select young laying queens	.75

Quantity discounts on orders over 25
Satisfaction and Safe Delivery Guaranteed.

R. B. Herier, Valdosta, Ga.

Package Bees, Queens

Three-Band leather-colored Italians. If interested in honey production you will do well to try some of our packages and queens.

Stock recently imported from Italy. Queens guaranteed against supersedure. They will clean up European Foulbrood..

Write for prices.

THE CROWVILLE APIARIES, Rt. 1, Winnsboro, La.

"BETTER-BRED QUEENS"

PACKAGES
YOUNG BEES

Same Satisfactory Prices for 1938

$2.45 for 2-lb. pkgs. with Queens; Queens, 75c

$3.15 for 3-lb. pkgs. with Queens

Dealers' Discount 15%.

Honest weight, three-banded Italians. Be wise and book your orders early for 1938. Orders booked without deposit.

CALVERT APIARIES, CALVERT, ALABAMA

Jensen's Package Bees and Queens

Time slips by; why not take it by the forelock and check your plans for expansion, or to bring up your colony count? This may be that big year, and first thing you know it you'll be doing your spring's bee work. We are here to serve you timely and well, and a little co-operation works wonders, so won't you place your order early enough for us to include you in our plans? You can increase or decrease it to suit your exact requirements, later. Our terms are cash prior to shipment. No deposit required to book. All bees and queens from our own yards. Service unexcelled.

Prices:

2-Pound Packages with Select 1938 Queens, 1-10, $2.65 each; 11-100, $2.55 each; 101-250, $2.45 each. Over 250 packages, to dealers for re-sale, or delivery to trucks, $2.25 each.
3-Pound Packages with Select 1938 Queens, 1-10, $3.40 each, 11-100, $3.30 each; 101-250, $3.20 each. Over 250 packages, to dealers for re-sale, or delivery to trucks, $3.00 each.
Queens 1-10, 85c each. 11-100, 75c each.

JENSEN'S APIARIES, BOX 305, MACON, MISS.

NEW NEW NEW
THE KING
UNIVERSAL BOARD
A SCIENTIFIC DEVISE
FOR SWARM CONTROL
TWO QUEEN COLONIES
AND MANY OTHER USES
For Prices and Other Information Write
O. A. KING
5918 Sewells Pt. Road Norfolk, Va.

GET RUNNING'S BEES
And Get Honey—They Satisfy
PACKAGES AND QUEENS
The kind WE use in our extensive Michigan Apiaries, where WE produce honey by the carload.
ALL ITALIAN STOCK
Service guaranteed. Stock bred for honey-getting and gentleness. Apiaries accredited and certified by Alabama Department of Agriculture. Get our free circular. YOU can now get RUNNING'S bees and queens as cheap as others.
All bees and queens shipped from our Alabama Apiaries.
2-lb. pkg. and queen, $2.45; 3-lb. pkg. and queen, $3.15. Untested Italian Queens, $0.75. No discounts.
DAVID RUNNING APIARIES
Sumterville, Ala., or Filion, Mich.

NUCLEI
Two and three frame nuclei with bees, brood and queen from strong, healthy colonies. Standard rates. Come down in your trucks, haul them away and save on shipping. Government inspected apiaries. Established 1898.
J. W. SMALL, Chriesman, Texas

Carniolans
Caucasians
Very gentle at all times, very prolific, wonderful workers. Ask for my free paper and learn more about these races. Queens and packages in season.
ALBERT G. HANN, GLEN GARDNER, N. J.

PURE! Italian Queens and Package Bees!

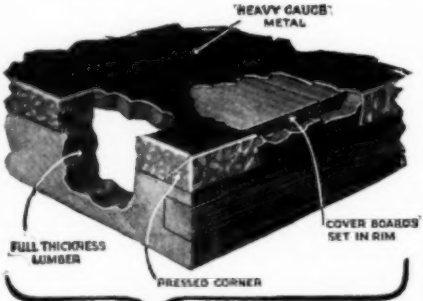
Operating in new territory—New equipment—A large supply—honest weight—Prompt shipments—light cages—You must and will be pleased.
2-lb. package with queen, each $2.45
3-lb. package with queen, each 3.15
Untested queen, each ..... .75

For queenless pkg. deduct price queen
15% discount to dealers

Regularly inspected—No disease known here

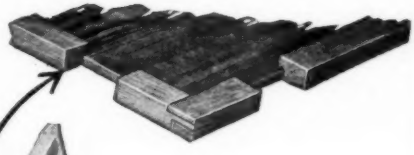
LUCEDALE APIARIES, LUCEDALE, MISSISSIPPI

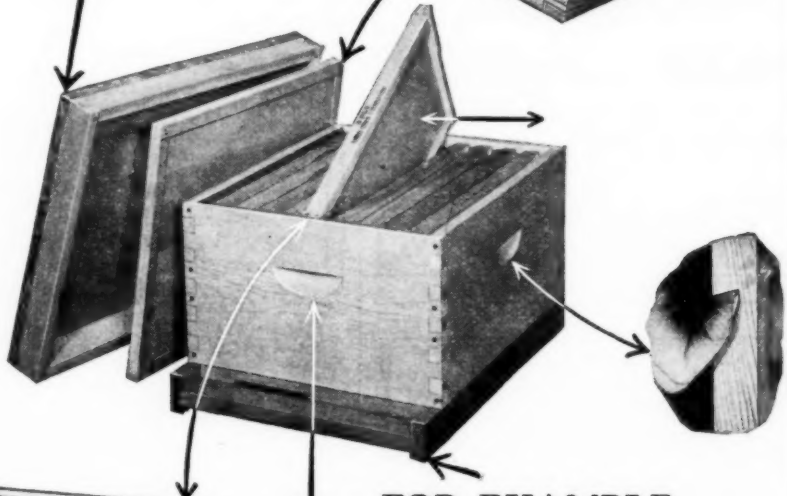
There Are Reasons

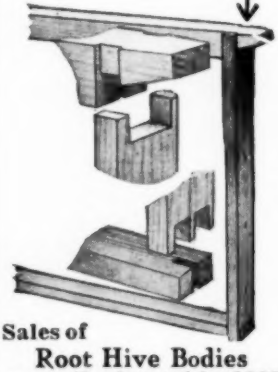


Why Thousands of Beekeepers

PREFER BEE SUPPLIES MADE BY ROOTS







Sales of
Root Hive Bodies were the largest in 1937 that they have been for 5 years.

---FOR EXAMPLE ROOT STANDARD HIVES

are accurately made in every detail. Every piece of lumber, its thickness, width and the cutting of it is studied and tested to give the greatest amount of satisfactory service. Even the placing of the nails to fasten the metal on the cover under-goes a rigid examination, so that the metal covers are made in the best way possible. The rounded under-cut handholds were not adopted until tests were made to determine the influence on protection to the bees.

WHEN YOU BUY ROOT HIVES

you are buying the results of 69 years of bee supply manufacturing experience.

SEE YOUR ROOT DEALER

The A. I. Root Co., Medina, Ohio

Genuine Italian

PACKAGE BEES AND QUEENS
from one of Alabama's largest producers

A large supply—Full weight packages—Fast and efficient service—Health certificate furnished—Select laying queens and young vigorous worker bees.

Book orders now. Delivery when wanted.

Italian Queens, each.....$ .75
2-lb. package with queen, each... 2.45
3-lb. " " " " ... 3.15
2-lb. package without queen ea... 1.70
3-lb. " " " " .. 2.40
For each additional lb. bees add. .70

15% discount from above prices to dealers.

HOLDER APIARIES
CITRONELLE, ALABAMA

Package Bees
APRIL DELIVERY

Twenty five 2-lb. sent to Michigan averaged five supers each; eleven 2-lb. in Indiana made 350 pounds; Pure Italian, 2-lb. with Queen, $2.45; 3-lb. with Queens, $3.25.

Safe Delivery Guaranteed.

HONEY BEE APIARIES, **Sandwich, Ill.**

SUPERSEDURE

Without Question the Biggest Prob'em that Confronts the Buyer and the Shipper of **PACKAGE BEES**

FOR THE FIRST TIME we are offering a package that will **Positively Reduce Supersedure** to an Average of LESS THAN 2%. Definite Tests With Hundreds of This SPECIAL PACKAGE Have Proven Conclusively That These are Facts. For complete information, illustrated booklet and price list, write at once. We are limiting this style package to three thousand for the season of 1938.

THE PUETT COMPANY, HAHIRA, GA. "Where Satisfaction is a Certainty"

Thrifty Bees

Forty-six years' experience assures you of the finest stock of **Thrifty**, three-banded Italian bees and good service.

Our combless packages are guaranteed full weight. Shipping crates are made of the lightest material and screened four sides. We ship you young, **Thrifty** bees that build strong colonies. No deposit required to reserve shipping date. Book your orders early and be sure of the best delivery.

Write for full information.

Remember, THRIFTY bees are guaranteed to please.

W. J. Forehand & Sons

Fort Deposit, Ala.

Breeders Since 1892.

PACKAGE BEES AND QUEENS

Finest quality Italians
Prompt, Fast, Safe, Service
Full weight. Guarantee safe arrival.

A. J. HOOK & CO.
Eutaw, Ala.

USING HONEY BEES

(Continued from page 76)

may use the bees to his economic advantage.

Today honeybees are used more than ever before in the production of honey and wax. There are more new uses for honey developed each year. Using bees as pollinizers of fruits, vegetables and clovers is increasing. The pollinizing of clovers is a factor in soil conservation. But what of the bee stinger and its products? Apparently this instrument of the worker bee was originally intended for a type of defense organ. Today this weapon of war has been beaten into a plow share of service to man's ailment—rheumatism.

Just what lies ahead of us in uses of the honeybee and its products will unfold after this prologue.

WHEN WRITING TO ADVERTISERS, MENTION GLEANINGS.

Book your order now for your package bees and queens. We offer quality bees and unsurpassed service. Prices as low as we can sell and keep up quality.

Geo. A. Hummer & Son

Prairie Point, Miss.

Why Wait Longer

Book your orders now for Bees and Queens. By booking early you are assured of prompt deliveries when you want them.

Prices	Retail	Dealers
2-lb. Packages with queens	$2.45	$2.08
3-lb. Packages with queens	3.15	2.68
Untested queens	.75	.64

Large supply with satisfaction guaranteed. No deposit required.

Merrill Bee Company, Bucatunna, Miss.

SHAKING VS. BURNING

(Continued from page 74)

sent to Atlantic, Iowa, to be further tested. No doubt other inspectors have done the same.

Further, let me state that bees that are really disease-resistant don't have to be burned, but the ones that show little or no resistance are the ones that are burned. That is just as it should be. Those that are not resistant are burned, leaving the progeny of the resistant to go on and multiply and so work toward a still more resistant strain. The burning law is doing as much or more toward the ultimate finding of a resistant bee as anything else, if and when a truly resistant bee is found whose progeny will breed true. Shaking means perpetuation of disease; burning means eradication of disease. Which will you have?

Sacramento, Calif.

MACK'S QUEENS

They Speak for Themselves

For prices write MACK, The Bee Man
Robinson, Ill.

Smith's Bees and Queens

Again we offer you our bees and queens backed by 20 years of careful study, 20 years of selecting the best breeders, and now we honestly believe we have as good strain as there is in America. We are supported in this belief by hundreds of satisfied customers who buy our bees year after year. We have increased our output and want to add new customers this season. You may expect full weight, 100% live delivery, shipped on dates set, very LOW supersedure. In fact, we guarantee that you will be a real SATISFIED customer. Write us your needs and let us book your order early to hold shipping date you want.

Marketing Agreement Prices.

N. B. SMITH & COMPANY

Calhoun, Alabama

California Bees & Queens

Most Northern Shippers in California

Safe Arrival and Satisfaction.

Lower express rates to the north and northwest.

"Quality" None Better.

Prices for 1938

2-Pound Package with Queen	$2.45 each
3-Pound Package with Queen	3.15 each
Queens	.75 each

Special prices on large lots.

Banta & Wire, Redding, Calif.

American Honey Institute

PRESENTS:

2 new honey leaflets and our Annual Report!

1. The popular little blue folder, HONEY HELPINGS, revised and selling at the same price.
2. The USING HONEY folder, long out of print but constantly in demand is at last revised and ready.
3. The ANNUAL REPORT plus a NEW FEATURE---a collection of prize-winning recipes from our four cookery contests.

Sample copies of the leaflets sent upon request. Annual report mailed to all Institute members.
Ten cents to non-members.

American Honey Institute

Madison, Wisconsin

This space donated by Gleanings in Bee Culture.

JUST NEWS

(Continued from page 89)

keeping at the age of nineteen while engaged as a mail carrier and postal clerk. Mr. Cutts continued beekeeping as a sideline. In 1908 he resigned his position as postal clerk to devote his entire time to bees and became one of the outstanding bee and queen shipper of the South. He organized and was president of the Alabama Beekeepers' Association for many years, was a life member of the American Honey Producers' League and was greatly interested in the American Honey Institute. Mr. Cutt's hobby was helping amateur beekeepers with their problems He was never too busy to answer their questions. In May, 1934, Mr. Cutts suffered a stroke and since then has not been actively engaged in business. Fortunately, his sons, Paul and Eugene, who learned the queen and package business under the able guidance of their father, have carried on the business and will continue under the same name, J. M. Cutts & Sons.

• • •

We have just received a form letter from J. M. Robinson, Managing Director, of the Marketing Agreement for Shippers of Package Bees and Queens, which contains this sentence: "This office has just received the following telegram: 'Secretary gave tentative approval today to marketing agreement for bee industry. Mimeographed copies will be received by you and all handlers near future.' "

• • •

Arthur L. Brandin of Chateauquay, Quebec, one of the largest and best known beekeepers of that Province, died recently. He had as many as 600 colonies, all in the home apiary and wintered in a cellar.

A Good Name to Go Buy

For eighteen years the name Cutts has stood for the best in package bees and queens. For 1938 we pledge you this same high quality and good service. It is not an accident that our packages and queens produce bigger honey crops There is a difference in packages and queens.

2-lbs. with queen.....$2.45
3-lbs. with queen..... 3.15

Fully guaranteed.
State inspected and accredited.

J. M. CUTTS & SONS
R. 1. Montgomery, Ala.

For 20 Years

We have bred from imported stock from Italy. Today we believe we have as near pure imported stock as it is possible to offer. This is why beekeepers everywhere prefer—

"ALABAM" DARK ITALIANS QUEENS AND PACKAGE BEES

No order too large, none too small, all will receive our prompt attention.

Let us mail you our new 1938 catalog just off the press.

Greenville Bee Company
Greenville, Alabama.

PATENTS—Williamson & Walton
Attorney for The A. I. Root Co.
Munsey Bldg. Washington, D. C.

Dixieland Package Bees & Queens

Best Stock Three-banded Italians

For Queens 75c | 2-lb. Pkg. With Queen $2.45 | 3-lb. Pkg. With Queen $3.15

15% Discount to Dealers. 10% Down to Book Order.
Our Queens are Bred for Quality from Carefully Selected and Tested Breeders.
Satisfaction and Safe Arrival Guaranteed.
We will appreciate your order, large or small. Give us a trial. Over 10 years' experience.

DIXIELAND APIARIES
G. E. Whittle and J. R. Felts, Mgrs.
Greenville, Ala. Star Rt. West

XUM

What Will Your Money Buy?

Will it buy a good package and queen with poor service? Or, will it buy good service with a poor package and queen? Beware of poor service and quality!
We realize that the intelligent and far-sighted buyer will demand a good package with good service:

A Clean and light container.
A Droneless and full weight package.
A Healthy package of bees and queen.
And delivered when wanted.

You will experience heavy losses in your ultimate crop of honey unless you buy wisely. May we have the pleasure of booking your orders now for quality packages and service?

Prices:

2-lb. Pkg. with select laying queen.....$2.45
3-lb. Pkg. " " " " 3.15
Select laying queen, each..... .75

15% Discount to authorized dealers.

GARON BEE COMPANY **Donaldsonville, La.**

Package Bees and Queens

Three-Band Italians

Young bees, full weight, Good Queens, when You Want them, by Express or Mail. Safe Arrival. Replacement or Refund on receipt of express bad order report.
Packages, including Queen, For March, April, and May,

2-lb. combless package, each..$2.45
3-lb. " " " .. 3.15
4-lb. " " " .. 3.85
5-lb. " " " .. 4.55
Queens, untested ..... .75
Queens, tested 1.50

Write for Prices on Comb Packages

D. C. Jackson, Funston, Ga.

For Sale Pure Italian Queens and Bees

Nothing but the best bright yellow and three-banded queens, 75 cents each.

1-lb. bees with young queen.....$1.75
2-lb. " " " " 2.45
3-lb. " " " " 3.15

You send for them, they go.

GRAYDON BROS.
Route 2, Greenville, Ala.

Bees and Queens

Three-band leather-colored stock.
Any size package.
Fruit growers, let us quote on your large size packages.
Write for circular; describing our over-size packages.

GOOCH APIARIES
Farmersville, Texas

BEEKEEPING IN ALBERTA

(Continued from page 81)

either case most of them prefer to increase the number of colonies by packages.

While northern Alberta beekeeping appears to have a future as bright as any district, some important problems face the beekeepers at the present time. The rougher nature of the country making agricultural development and road-building more difficult and expensive tends to prevent the rapid development of large commercial beekeeping enterprises. In the last few years production has increased until there is sufficient honey produced for local use and it is only a matter of time until exportation on a considerable scale will have to be undertaken if expansion continues at the present rate.

Costs of materials are generally high. Beekeepers depending on package bees feel the effects of failure of poor queens in packages more in the short but busy honey season than those who experience a longer season and are closer to the source of supply. In time these problems will be solved but in the meantime the Southern irrigated districts will continue to be the home of the largest commercial beekeepers, and the north of the smaller apiary operated in connection with the mixed farm, but with a few specialized large apiaries in some of the most favored locations.

Colinton, Alberta.

WHEN WRITING TO ADVERTISERS, MENTION GLEANINGS.

Package Bees and Queens

Quality Bred Italians

The New Year is here and we should put every effort forward to make it one of the best. During the past season honey crops may have been less favorable in many sections, but the small carry-over should lend encouragement for greater production and demand. The general outlook appears bright for the producer who may take advantage of the opportunity to be ready.

Write us now for prices on package bees in any quantity for spring delivery and book order for shipping date wanted. We are prepared to help you with a larger supply, better quality and service than ever before. Safe arrival and satisfaction guaranteed.

York Bee Company

Jesup, Georgia

(The Home of Quality Products)

A Good Rule to Go By

Buy your Italian bees and queens from

ALABAMA APIARIES

MT. PLEASANT, ALA.

Marketing Agreement Prices

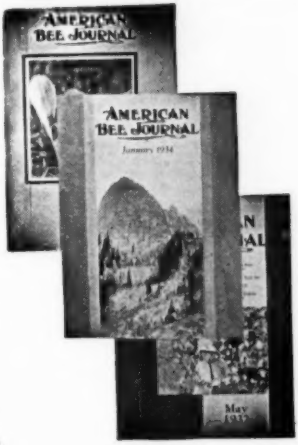
2 Years $1.50

American Bee Journal—monthly; published and edited by beekeepers for beekeepers. Full of pictures and tips on care of bees and selling of honey. **SAMPLE COPY FREE.**

$1.00 a year, 2 years $1.50 in U. S. A. and Canada.

Combined with Gleanings in Bee Culture—both magazines, **ONE YEAR, $1.60.** This offer good only in the United States. Address—

American Bee Journal, Hamilton, Illinois



Reliable Service, Reliable Package Bees and Queens

Three Band Italian Bees and Queens
Price List, Via Express Collect

2-lb. package bees with select untested queen .....$2.45 each
3-lb. package bees with select untested queen .....$3.15 each
Select Untested Queens...75c each
Select Tested Queens...$1.50 each
Prices of package bees via mail quoted on request.

15% discount on the above prices will be allowed dealers on bees for re-sale.

Support the American Honey Institute.

Formerly Hayneville Apiary Co.

W. E. HARRELL
HAYNEVILLE, ALABAMA

Treat yourself to the best with

KNIGHT'S

Leather-Colored Italian

Bees and Queens

Accredited and Certified by Agricultural Department of Alabama

They are the best honey-gatherers, the best winterers, and reasonably gentle.

2-lb. pkgs.	including	queen	.....	$2.45
3-lb.	"	"	"	3.15
4-lb.	"	"	"	3.85
5-lb.	"	"	"	4.55

For queenless packages, deduct 75c
Parcel Post Shipments: Add 10c plus postage. Write for delivered prices.

QUEENS

Guaranteed mated pure, select, 75c. No charge for clipping.

15% discount to dealers. Full weight guaranteed with young bees.

JASPER KNIGHT
HAYNEVILLE, ALA.

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